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**Division of Commercial Fisheries Special Publication No. 28**

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**Northern Southeast Alaska Comprehensive Salmon  
Plan: 1994 Update and 5-Year Action Plan for  
Salmon Enhancement and Rehabilitation**

by

**ADF&G Private Nonprofit Program Staff**

December 1995

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Alaska Department of Fish and Game

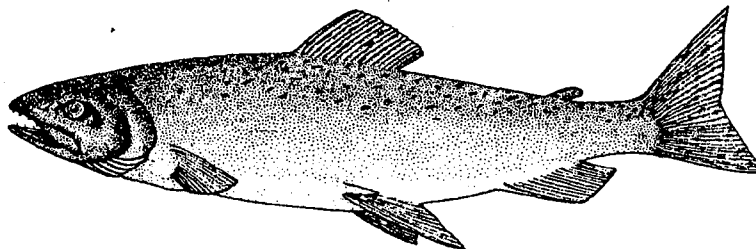
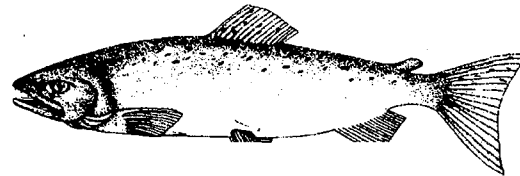
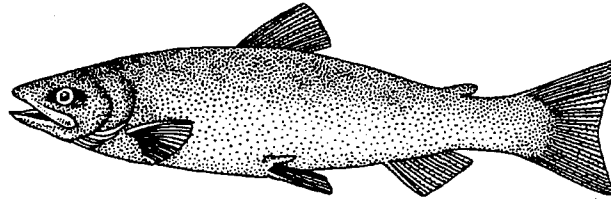
Division Commercial Fisheries





# **NORTHERN SOUTHEAST ALASKA COMPREHENSIVE SALMON PLAN**

## **1994 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation**



**Prepared by PNP Program Staff of ADF&G for the  
Northern Southeast Regional Planning Team for  
Frank Rue, Commissioner, ADF&G**

Alaska Department of Fish and Game  
Commercial Fisheries Management and Development Division  
P.O. Box 25526  
Juneau, AK 99802-5526

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## **SECTION 1.**

### **INTRODUCTION**





## Background

The Commissioner of the Alaska Department of Fish and Game (ADF&G) approved the revised Comprehensive Salmon Plan, Phase II, Northern Southeast Alaska in January, 1986. That document (together with the Phase I plan) provides the official blueprint for activities to increase salmon production in the region. Since the beginning, the salmon planning process has been constantly evolving, and changes to the plan have been reflected in annual updates that make it responsive to new knowledge, ideas, and changing conditions. Furthermore, annual updates are designed to measure the progress towards Phase I goals and objectives and to update the 5-year Action Plan by listing newly recommended projects and revising the status of ongoing projects for the 1994-1998 period.

## Reference Documents

1. Comprehensive Salmon Plan for Southeast Alaska, Phase I; Joint Regional Planning Teams, April 1981.
2. Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, December 1982.
3. Chinook Salmon Plan for Southeast Alaska, 1983. J. Holland (ADF&G), B. Bachen (NSRAA), G. Freitag (SSRAA), P. Kissner (ADF&G), and A. Wertheimer (NMFS).
4. Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, revised Jan. 1986
5. 1986 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, June 1986.
6. 1987 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, April 1987.
7. 1988 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, Kevin C. Duffy, March 1989.
8. 1989 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Regional Planning Team, Kevin C. Duffy, March 1990.
9. 1990 Update, Comprehensive Salmon Plan, Phase II: Northern SE Alaska: Northern Southeast Planning Team, Kevin C. Duffy, April, 1991.

10. Northern Southeast Alaska Comprehensive Salmon Plan 1991 Phase II Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1992.
11. Northern Southeast Alaska Comprehensive Salmon Plan 1992 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1993.
12. Northern Southeast Alaska Comprehensive Salmon Plan 1993 Update and 5-Year Action Plan for Salmon Enhancement and Rehabilitation: prepared by PNP program staff of ADF&G for the Northern Southeast RPT for Carl L. Rosier, Commissioner. December 1994.

### **1994 Progress Report**

This update is a report on hatchery production and new project implementation for salmon enhancement efforts in northern Southeast Alaska in 1994. It is intended to provide current information on hatchery releases, adult returns, hatchery contributions to common property fisheries, and new projects designed to increase the harvest of salmon in Southeast Alaska.

The tables in Section 2 identify the projected and actual enhancement contributions by species to the northern Southeast salmon harvest in 1994. Following each summary table, individual project tables are listed that track and document yearly production from each facility. The definitions or explanations of table categories listed below illustrate how the standard assumptions on salmonid survivals (unmarked fish) and fecundities of ADF&G Commercial Fisheries Management and Development (CFMD) Division will be applied to analyze the production from hatcheries and enhancement projects.

### **Definitions/Explanations**

1. Projected common property harvest - Assumed harvest rate times total return (chinook "jacks" not included).
2. Projected total return - (a) Assumed survival to adult times number of smolts or fry released or (b) actual survival of smolts times either actual or projected past harvest rates times number of smolts.
3. Escapement - Includes fish taken for brood stock and cost recovery.

4. Production basis - Number of "green" eggs permitted.
5. Assumed percentage survival to smolts - CFMD standard assumption.
6. Number of smolts or fry - Production basis times assumed survival to smolt or fry release.
7. Assumed or actual harvest rate - Average of past harvest rates, if available.
8. Projected number of smolts - Production basis times assumed percentage survival to smolts.
9. Assumed or actual harvest rate - Average of past harvest rate.
10. Common property harvest - Harvest rate times total return.

Unfortunately, some hatcheries have not followed a consistent life-stage release pattern. If a facility releases only two life stages (i.e., smolts and fry), production can be projected through tables on each stage; however, when a hatchery releases three or more life stages with no consistency in numbers or percentages of releases (i.e., fry, fingerlings, presmolts, smolts), assumptions concerning returns, survivals, and harvest rates cannot be applied. Although some hatcheries may have infrequently deviated from their normal pattern of life-stage releases for experimental purposes, such deviations are relatively minor factors, having little or no effect on survival calculations.

Tables in the 5-year Action Plan have been updated by (1) describing the status of existing projects and (2) adding new projects endorsed by the Northern Southeast Regional Planning Team (NSERPT) for inclusion in the Phase II Update. While chinook salmon production is still a priority for northern Southeast Alaska, sockeye and coho salmon enhancement present major challenges to fisheries and enhancement managers. Mitigation for harvest losses to gear groups in Southeast Alaska directly caused by implementation of the U.S./Canada Pacific Salmon Treaty has been provided through federally funded enhancement projects. Section 7 of this Phase II update provides a narrative and associated tables that reflect the current status of these projects, which were designed to produce additional chinook, sockeye, and chum salmon for harvest in Southeast Alaska.



**SECTION 2.**

**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**CHINOOK**

**1994**



TABLE 1. 1994 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

CHINOOK SALMONPROJECTED FULL PRODUCTIONCURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 100,000	1,860	534	1994	1,280	538
LITTLE PORT WALTER RESEARCH STATION	OUTER COAST	SMOLT 250,000	7,500	3,848	1994	3,770	1,636
MEDVEJIE CENTRAL INCUBATION FACILITY	OUTER COAST	EGGS 2,000,000	22,000	8,032	1994	19,472	6,532
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 1,650,000	32,550	8,240	1994	6,519	2,603
SNETTISHAM HATCHERY	STEPHENS PASSAGE	PROGRAM DISCONTINUED IN 1993	N/A	N/A	1994	10,055	8,557
GASTINEAU HATCHERY	STEPHENS PASSAGE	EGGS 700,000	13,020	3,920	1994	3,063	797
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 2,000,000	37,200	16,108	1994	925	529
BURRO CREEK HATCHERY	LYNN CANAL	EGGS 50,000	930	N/A	1994	N/A	N/A
CHILKAT RIVER STOCKING	LYNN CANAL	EGGS 70,000	N/A	N/A	1994	N/A	N/A
FARRAGUT RIVER STOCKING	FREDERICK SOUND	EGGS 250,000	N/A	N/A	1994	N/A	N/A
TOTAL OF CURRENT PROJECTS			115,060	40,682	1994	45,084	21,192

TABLE 2. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST

CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1984	61,128	SMOLT	54,164	1988	22	0	22	0
1985	49,603	SMOLT	47,000	1989	163	13	176	7.0
1986	48,753	SMOLT	30,000	1990	260	91	351	25.9%
1987	100,000	SMOLT	96,692	1991	376	129	505	25.5%
1988	130,000	SMOLT	100,482	1992	196	241	437	55.2%
1989	58,173	SMOLT	50,538	1993	504	420	924	45.6%
1990	155,000	SMOLT	94,092	1994	742	538	1,280	42.0%
1991	129,696	SMOLT	89,443					
1992	144,942	SMOLT	103,391					
1993	146,681							
1994	121,044							

5-YEAR AVERAGE (1990-1994)

28.7%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 100,000	62%	62,000	3%	1,860	28.7%	534



TABLE 3. LITTLE PORT WALTER RESEARCH STATION  
UNIT: OUTER COAST  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS <sup>4</sup>	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT <sup>3</sup>	C.P. HARVEST	TOTAL RETURN <sup>1</sup>	HARVEST RATE
1977	204,700	SMOLT	116,500	1980	61	1,701	1,762	97.0%
1978	321,300	SMOLT	194,200	1981	288	589	877	67.5%
1979	33,900	SMOLT	30,600	1982	944	487	1,431	66.0%
1980	24,800	SMOLT	20,300	1983	788	662	1,450	46.5%
1981	355,300 <sup>2</sup>	SMOLT & FRY*	144,000	1984	1,262	713	1,975	39.2%
1982	246,499	SMOLT	175,300	1985	1,328	1,527	2,855	60.1%
1983	413,900	SMOLT & FRY*	334,700	1986	3,756 <sup>3</sup>	2,701	6,457	44.1%
1984	514,700 <sup>2</sup>	SMOLT	175,400	1987	5,349 <sup>3</sup>	4,178	9,527	41.1%
1985	554,000	SMOLT	315,142	1988	4,143 <sup>3</sup>	3,449	7,592	35.0%
1986	600,000 <sup>2</sup>	SMOLT	377,300	1989	3,996 <sup>3</sup>	1,800	5,796	32.0%
1987	500,000 <sup>2</sup>	SMOLT	161,800	1990	2,349	4,148	6,497	63.8%
1988	391,000 <sup>2</sup>	SMOLT	166,000	1991	2,800	4,617	7,417	62.0%
1989	841,500	SMOLT	187,000	1992	1,655	1,371	3,026	45.3%
1990	1,056,000	SMOLT	300,000	1993	1,715	917	2,632	34.8%
1991	938,000	SMOLT	200,969	1994	2,134	1,636	3,770 <sup>3</sup>	43.4%
1992	1,309,000	SMOLT	150,413					
1993	1,597,000	SMOLT						
1994	1,874,500							

AVERAGE

51.3%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
SMOLT	250,000	3%	7,500	51.3%	3,848

<sup>1</sup> Includes 3-year-old males.

<sup>2</sup> Does not include eggs shipped to other facilities.

<sup>3</sup> Includes all jack returns

<sup>4</sup> Includes eggs for experimental purposes.

\*The release of fry is for research purposes and is not considered a significant factor in projected production at full capacity.

TABLE 4. MEDVEJIE CENTRAL INCUBATION FACILITY  
UNIT: OUTER COAST

CHINOOK SALMON

PRODUCTION TO DATE

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1982	46,500	SMOLT	26,600	1986	37	10	47	21.3%
1983	36,509	SMOLT	21,883	1987	179	105	284	37.0%
1984	163,500	SMOLT	108,041	1988	298	121	419	28.9%
1985	291,600	SMOLT	227,500	1989	225	44	269	16.4%
1986	228,059	SMOLT	174,600	1990	1,790	703	2,493	28.2%
1987	1,343,200	SMOLT	743,737	1991	5,230	1,687	6,917	24.4%
1988	1,423,380	SMOLT	920,994	1992	9,275	5,711	14,986	38.1%
1989	1,512,100	SMOLT	866,800	1993	12,630	6,567	19,197	34.2%
1990	1,561,000	SMOLT	1,144,800	1994	11,425	6,532	19,472	33.6%
1991	882,000	SMOLT	762,369					
1992	1,599,000	SMOLT	720,681					
1993	1,583,900							
1994	1,830,790							

AVERAGE

29.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	69%	1,380,000	2%	27,600	29.1%	8,032

TABLE 5. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAIT  
CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	475,084	SMOLT	80,460	1985	20	76	96	79.2%
1982	78,554	SMOLT	70,000	1986	7	243	250	97.2%
1983	136,000	SMOLT	96,956	1987	115	490	605	81.0%
1984	99,000	SMOLT	92,100	1988	302	190	492	38.6%
1985	339,000	FRY <sup>1</sup> SMOLT	181,000 <sup>1</sup> 97,984	1989	298	154	452	34.4%
1986	273,100	SMOLT	158,957	1990	286	473	759	62.3%
1987	419,000	SMOLT	343,752	1991	1,053	1,071	2,124	50.4%
1988	470,000 <sup>3</sup>	SMOLT FED FRY*	310,783 29,402 <sup>2</sup>	1992	1,584	707	2,291	30.9%
1989	448,246	SMOLT	184,468	1993	1,358	409	1,767	23.2%
1990	2,895,570 <sup>5</sup>	SMOLT	1,554,068	1994	3,916	2,603	6,519	40.0%
1991	2,681,789 <sup>6</sup>	SMOLT	1,754,555					
1992	2,019,282	SMOLT	1,053,038					
1993	1,858,732							
1994	1,608,717							

AVERAGE

53.7%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,650,000	62%	1,023,000	1.5%	15,345	53.7%	8,240

<sup>1</sup> Release of fry is for research purposes and is not considered a significant factor in "Projected Production at Full Capacity."

<sup>2</sup> Released into Eliza Lake and Indian River.

<sup>3</sup> Includes 40,685 Tahini stock taken at Lutak Inlet for release as smolts at Hidden Falls.

<sup>4</sup> Released into Farragut River.

<sup>5</sup> Includes 30,238 Tahini stock taken at Skagway for release as smolts at Hidden Falls.

<sup>6</sup> Includes 56,964 Tahini stock taken at Skagway for release as smolts at Hidden Falls.

**TABLE 6. SNETTISHAM HATCHERY  
UNIT: STEPHENS PASSAGE  
CHINOOK SALMON**

**PRODUCTION TO DATE**

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1977	66,315	SMOLT	19,029	1981	2	5	7	71.4%
1978	0		0	1982	0	0	0	N/A
1979	86,300	SMOLT	26,746	1983	21	9	30	30.0%
1980	66,100	SMOLT	39,200	1984	30	290	320	90.6%
1981	500,041	SMOLT	234,000	1985	81	395	476	83.0%
1982	405,144	SMOLT	286,000	1986	180	780	960	81.3%
1983	141,600	SMOLT	108,900	1987	649	2,095	2,744	76.4%
1984	1,191,600	SMOLT AND FRY*	1,305,000 <sup>1</sup>	1988	486	1,614	2,100	76.9%
1985	5,740,000	SMOLT	1,047,000	1989	347	1,579	1,926	82.0%
1986	1,459,000	SMOLT	430,000	1990	1,035	4,527	5,562	81.4%
1987	4,200,000	SMOLT AND FRY*	1,503,941	1991	963	2,987	3,950	75.6%
1988	4,492,000	SMOLT AGE-2 SMOLT	1,603,888 307,000	1992	696	8,291	8,987	92.3%
1989	266,000	SMOLT	91,200	1993	1,504	11,042	12,546	88.0%
1990	2,227,000	SMOLT <sup>3</sup>	286,000					
1991	3,850,000		1,590,000					
1992	688,000							
1993	PROGRAM	DISCONTINUED						

10-YEAR AVERAGE (1985-1994)

82.8%

**PROJECTED PRODUCTION AT FULL CAPACITY**

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 3,240,000	62%	2,008,800	3%	60,264	82.8%	49,899

<sup>1</sup> Includes 911,000 fed fry released into Redoubt Lake and smolt released at four Juneau locations.

<sup>2</sup> Includes 269,000 fry released into Indian River near Tenakee.

\*Release of fry is for research purposes and is not considered a significant factor in "Projected Production at Full Capacity."

<sup>3</sup> 306,701 smolts released at Port Armstrong in June 1992 (transferred from Snettisham in May 1992 @ 7g).

TABLE 7. GASTINEAU HATCHERY - DIPAC  
UNIT: STEPHENS PASSAGE

CHINOOK SALMON

PRODUCTION TO DATE

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1987			11,000 <sup>1</sup>					
1988	200,000 <sup>2</sup>	SMOLT	101,476	1991	95			
1989	50,000	SMOLT	43,596	1992	160	1	161	N/A
1990	213,271	SMOLT	191,765	1993	519	268	785	34.1%
1991	242,104 <sup>3</sup>	FED FRY SMOLT	107,399 210,915	1994	2,266	797	3,063	26.0%
1992	289,494	FED FRY SMOLT	24,057					
1993	494,532 <sup>4</sup>							
1994	1,504,814 <sup>5</sup>							

AVERAGE

30.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 700,000	62%	434,000	3%	13,020	30.1%	3,920

<sup>1</sup> Smolt transferred from Snettisham Hatchery.

<sup>2</sup> Eggs taken at Snettisham for transfer to Gastineau as smolt in 1990.

<sup>3</sup> Includes 115,180 eggs for incubation under contract with FRED Division.

<sup>4</sup> Includes 208,500 eggs from Little Port Walter and 30,450 eggs from Big Boulder Creek under contract with Sport Fish Division.

<sup>5</sup> Includes 464,360 eggs for NSRAA and 429,545 eyed eggs from Little Port Walter.

TABLE 8. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	74,444 <sup>1</sup>	SMOLT	70,000	1988	283	3		
1986	80,000	SMOLT	76,000 <sup>2</sup>	1989	213	8	281	24.1%
1987	130,000	SMOLT	89,942	1990	419	477	896	53.2%
1988	166,000	SMOLT	144,323	1991	199	134	333	40.2%
1989	154,588	SMOLT	62,176	1992	734	987	1,721	57.4%
1990	336,316 <sup>3</sup>	SMOLT	395,665 <sup>5</sup>	1993	1,753	679	2,432	27.9%
1991	32,800 <sup>4</sup>	SMOLT	1,275,000 <sup>6</sup>	1994	329	527	925	57.2%
1992	NONE	SMOLT						
1993	NONE							
1994	NONE							

AVERAGE

43.3%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	62%	1,240,000	3%	37,200	43.3%	16,108

<sup>1</sup> Based on 90% survival to emergent fry. 67,000 fry received at Port Armstrong from Little Port Walter.

<sup>2</sup> Released as Age-0 smolts.

<sup>3</sup> 176,000 eggs from Little Port Walter destroyed October 8, 1990, because of high rate of bacterial kidney disease (BKD).

<sup>4</sup> All fish died because of pipeline failures; 42,111 fry received from Little Port Walter on 3/26/92.

<sup>5</sup> BY 1990 Crystal Lake\Unuk River smolts transferred from Snettisham Hatchery from 10 to 15 May, kept in net pens for 1 month, and released at Port Armstrong; also 88,964 BY 1990 Little Port Walter smolts released May 26 at Port Armstrong.

<sup>6</sup> these fish were transferred at 5.9 gm from Snettisham in early May 1993, reared in saltwater netpens with freshwater lens for one month, and released.

TABLE 9. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL

CHINOOK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1990	10,000	SMOLT	7,084	1994	32	N/A	N/A	N/A
1991	24,000 <sup>1</sup>	SMOLT	8,500					
1992	18,000 <sup>1</sup>	SMOLT	8,749					
1993	5,400 <sup>1</sup>							
1994	66,369							

PROJECTED PRODUCTION AT FULL CAPACITY (Based on release of smolt.)

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000	62%	31,000	3%	930	N/A	N/A

<sup>1</sup> Eyed eggs (Tahini stock) from Hidden Falls.

TABLE 10. OTHER STOCKING PROJECTS IN 1994

CHINOOK SALMONPRODUCTION TO DATE

BROOD YEAR	LIFE STAGE AT RELEASE	NUMBER TAGGED	NUMBER RELEASED	RETURN YEARS	RELEASE SITE	FACILITY	ORIGIN
1991	SMOLT	NONE	10,000	N/A	TWIN LAKES	SNETTISHAM	CRYSTAL CREEK
1992	SMOLT	40,510	141,000	1997-2001	AUKE BAY	SNETTISHAM	CRYSTAL CREEK
1992	SMOLT	40,390	143,000	1997-2001	FISH CREEK	SNETTISHAM	CRYSTAL CREEK
1993	FED FRY	20,841	283,000	1998-2002	INDIAN LAKE	SNETTISHAM	CRYSTAL CREEK
1992	SMOLT	37,779	38,789	1997-2001	TAIYA INLET	JERRY MYERS	HIDDEN FALLS
1992	SMOLT	8,749	8,749	1997-2001	TAIYA INLET	HIDDEN FALLS	HIDDEN FALLS
1993	FRY	26,546	28,062	1998-2002	BIG BOULDER	GASTINEAU	BIG BOULDER
1993	FED FRY	52,589	125,200	1998-2002	FARRAGUT LAKE	CRYSTAL LAKE	FARRAGUT RIVER
1993	FRY	23,939	24,329	1998-2002	BIG BOULDER	INCUBATION BOX	BIG BOULDER



## **NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**COHO**

**1994**



TABLE 11. 1994 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

COHO SALMONPROJECTED FULL PRODUCTIONCURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
MEDVEJIE CIF/LAKE REARING	OUTER COAST	EGGS 2,900,000	113,970	65,875	1994	263,816	168,663
MEDVEJIE CIF/SMOLT PRODUCTION	OUTER COAST	EGGS 400,000	33,600	28,358	1994	62,111	61,410
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 150,000	4,650	2,018	1994	780	446
DIPAC/GASTINEAU HATCHERY	STEPHENS PASSAGE	EGGS 1,500,000	46,500	28,226	1994	177,702	124,084
BURRO CREEK FARMS	LYNN CANAL	EGGS 50,000	1,550	950	1994	142	80
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 1,700,000	495,900	290,597	1994	91,326	62,497
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 1,500,000	46,500	28,598	1994	3,805	2,519
TOTAL OF CURRENT PROJECTS			742,670	447,622	1994	599,682	419,699

<sup>1</sup> Coho production has been phased out at Snettisham.

TABLE 12. MEDVEJIE CENTRAL INCUBATION FACILITY  
LAKE REARING  
UNIT: OUTER COAST  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER GREEN EGGS	NUMBER STOCKED	NUMBER OUTMIGRATED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	156,675	112,686	78,379	1984	5,687	6,396	12,083	52.9%
1982	226,000	115,250 <sup>2</sup>	7,750 <sup>1</sup>	1985	185	424	609	69.6%
1983	236,000	188,603	106,864	1986	899	893	1,792	49.8%
1984	1,453,200	1,067,952	340,336	1987	11,238	11,856	23,094	51.4%
1985	75,100	69,974	35,383	1988	1,742	1,350	3,092	43.7%
1986	988,000	842,900	370,485	1989	13,782	12,259	26,041	47.1%
1987	1,026,300	915,269	486,986	1990	26,424	34,525	60,949	56.6%
1988	1,506,000	1,443,500	680,000	1991	70,700	99,600	170,300	59.0%
1989	1,907,900	1,741,500	737,337	1992	44,660	91,100	135,000	67.5%
1990	2,396,000	1,875,000	591,835	1993	20,115	56,350	76,500	73.7%
1991	2,627,855	2,280,000	1,031,536	1994	95,153	168,663	263,816	63.9
1992	2,741,100	2,330,000	1,131,975					
1993	2,359,300	2,076,000						
1994	2,415,000							

AVERAGE

57.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FRY	# OF FRY	ASSUMED % SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,900,000	78.6%	2,279,400	50%	1,139,700	10%	113,970	57.8%	65,875

<sup>1</sup> Losses primarily due to cestode infestation.

<sup>2</sup> Losses primarily eggs destroyed due to parent with BKD.

TABLE 13. MEDVEJIE CENTRAL INCUBATION FACILITY  
SMOLT RELEASES  
UNIT: OUTER COAST

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	145,600	SMOLT	119,897	1991	6,082	5,729	11,811	49.0%
1989	115,600	SMOLT	100,992	1992	395	6,529	6,924	94.3%
1990	162,000	SMOLT	138,895	1993	1,017	21,037	22,054	95.4%
1991	504,400	SMOLT	422,000	1994	701	61,410	62,111	98.9%
1992	241,000	SMOLT	209,910 <sup>1</sup>	1995				
1993	236,700	SMOLT						
1994	258,000							

AVERAGE

84.4%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 400,000	84%	336,000	10%	33,600	84.4%	28,358

<sup>1</sup> 4,990 released at Medvejie; 49,890 released at Deep Inlet; and 155,030 released at Shamrock Bay; does not include 1,900 fry released at Wrinklneck Creek

TABLE 14. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST  
COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1977	10,500	SMOLT	2,723	1980	0		0	
1978	33,430	SMOLT	12,045	1981	250	31	281	11.0%
1979	3,000	SMOLT	2,523	1982	12	7	19	36.8%
1980	32,983	SMOLT	8,769	1983	16	5	21	23.8%
1981	68,529	SMOLT	2,930	1984	95	58	153	37.9%
1982	72,935	SMOLT	54,695	1985	1,800	1,409	3,209	43.9%
1983	19,338	SMOLT	6,623	1986	161	168	329	51.1%
1984	103,519	SMOLT	86,366	1987	822	336	1,158	29.0%
1985	150,000	SMOLT	110,000	1988	1,286	1,077	2,363	45.6%
1986	168,000	SMOLT	100,000	1989	1,405	1,078	2,483	43.4%
1987	300,000	SMOLT	81,248	1990	520	690	1,210	57.0%
1988	140,000	SMOLT	43,863	1991	728	1,014	1,815	55.8%
1989	115,000	SMOLT	49,781	1992	1,534	1,507	3,041	49.6%
1990	120,400	SMOLT	70,669	1993	782	1,469	2,251	65.3%
1991	127,649	SMOLT	31,071 <sup>1</sup>	1994	334	446	780	57.2%
1992	163,995	SMOLT	96,134					
1993	150,500	SMOLT						
1994	157,700							

AVERAGE

43.4%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 150,000	62%	93,000	5%	4,650	43.4%	2,018

<sup>1</sup> Severe Trichodina outbreak and inadequate formalin treatment caused 65% plus mortalities after ponding.

TABLE 15. SNETTISHAM HATCHERY  
UNIT: STEPHENS PASSAGE

COHO SALMON<sup>1</sup>

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE*
1978	190,000	FRY/SMOLTS	164,336	1981	317	146	463	31.5%
1979	201,000	SMOLTS	98,980	1982	206	666	872	76.4%
1980	19,600	SMOLTS	15,000	1983	70	59	129	45.7%
1981	924,000	FRY SMOLTS	517,000 295,000	1984 1984	N/A 2,038	3,044	5,082	59.9%
1982	491,400	SMOLTS	237,000	1985	1,851	7,576 <sup>a</sup>	9,427	80.4%
1983	368,000	SMOLTS	237,000 <sup>2</sup>	1986	959	5,414 <sup>b</sup>	6,373	85.0%
1984	721,000	FRY/SMOLTS	112,700 <sup>2,3</sup>	1987	460	7,479 <sup>c</sup>	7,939	94.2%
1985	1,944,000	FRY/SMOLTS	1,106,400 <sup>3</sup>	1988	866	4,599 <sup>d</sup>	5,465	84.2%
1986	1,600,000	FRY/SMOLTS	621,000	1989	7,240	14,391 <sup>e</sup>	22,820	63.1%
1987	181,000	SMOLTS	73,499	1990	5,124	10,906	14,823	73.6%
1988	0	—	—	1991	3,000	3,557	6,557	54.3%
1989	426,000	FRY	406,000 <sup>4</sup>	1992	407	406	813	49.9%
1990	261,000	FRY	219,000	1993	1,600	1,640	3,240	50.6%
1991	COHO	PROGRAM	DISCONTINUED	1994	524	811	1,335	60.8%

AVERAGE

65.0%

SNETTISHAM HATCHERY CEASED CULTURING COHO SALMON AFTER THE 1991 RELEASE.

<sup>1</sup> Coho production being phased out at Snettisham Hatchery.

<sup>2</sup> Includes releases into Twin Lakes and Salmon Creek, Juneau.

<sup>3</sup> Includes fry released into Indian Lake.

<sup>4</sup> Fry released into Indian Lake and at hatchery.

\* exclusive of Twin Lakes harvest.

<sup>a</sup> includes 1,200 caught in Twin Lakes sport fishery.

<sup>b</sup> includes 2,000 caught in Twin Lakes sport fishery.

<sup>c</sup> includes 6,600 caught in Twin Lakes sport fishery.

<sup>d</sup> includes 3,300 caught in Twin Lakes sport fishery.

<sup>e</sup> includes 3,800 caught in Twin Lakes sport fishery.

**TABLE 16. DIPAC/GASTINEAU HATCHERY  
UNIT: STEPHENS PASSAGE**

**COHO SALMON**

**PRODUCTION TO DATE**

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	65,761	SMOLT	60,000	1988	678	723	1,401	51.6%
1986	77,000	SMOLT	68,500	1989	3,873	6,210	10,083	61.6%
1987	40,000	SMOLT	36,850	1990	1,132	2,313	3,445	67.1%
1988	1,095,270	FINGERLING SMOLT	100,765 1,079,473	1991	120,043	145,290	269,995	53.8%
1989	1,000,000	SMOLT	1,012,106	1992	72,766	109,415	182,181	60.1%
1990	1,110,348	SMOLT	976,963	1993	45,187	70,221	115,408	60.9%
1991	1,095,276	SMOLT	1,045,938	1994	53,618	124,084	177,702	69.8%
1992	1,126,160	FED FRY <sup>1</sup> SMOLT	2,000 943,853					
1993	1,122,828	FED FRY	126,265					
1994	910,042							

AVERAGE

60.7%

**PROJECTED PRODUCTION AT FULL CAPACITY**

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,500,000	62%	930,000	5%	46,500	60.7%	28,226

<sup>1</sup> Fed fry released into Picnic Creek, near Lena Cove, on 9/30/93 as part of a cooperative agreement between DIPAC and the U.S. Forest Service for the purpose of stock rebuilding.



TABLE 17. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1986	5,000	SMOLT	4,516	1989	10	10	20	50.0%
1987	15,000	PRESMOLT	10,000	1990	10	10	20	50.0%
1988	50,000	EYED EGGS <sup>1</sup>	50,000	1991	592	592	1,184	50.0%
	13,000	SMOLT	11,000					
1989	20,000	SMOLT	7,718	1992	12	230	242	95.0%
1990	NONE	N/A	N/A	1993	52	102	154	66.2%
1991	50,000	SMOLT	38,062	1994	62	80	142	56.3%
1992	5,000	SMOLT	1,212					
1993	15,000							
1994	15,000							

AVERAGE

61.3%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000	62%	31,000	5%	1,550	61.3%	950

<sup>1</sup> Eyed eggs released into Burro Creek on January 30, 1989, when hatchery froze.

<sup>2</sup> Fry obtained from DIPAC.

TABLE 18. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAIT

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	68,602	SMOLTS	62,595	1991	5,270	4,892	10,162	48.1%
1989	70,076	SMOLTS	64,155	1992	9,410	9,262	18,672	49.6%
1990	238,060	SMOLTS	168,028	1993	10,658	22,778	33,436	68.1%
1991	475,195	SMOLTS	461,169 <sup>1</sup>	1994	28,829	62,497	91,326	68.4
1992	1,734,605	SMOLTS	1,610,520					
1993	2,718,450							
1994	5,636,542 <sup>2</sup>							

AVERAGE

58.6%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLTS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,700,000	87%	4,959,000	10%	495,900	58.6%	290,597

<sup>1</sup> 56,964 smolts shipped to Skagway for release; remainder released at Kasnyku Bay.

<sup>2</sup> includes 1,500,000 for Port Armstrong.

TABLE 19. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

COHO SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1988	140,000	SMOLT	121,730	1991	13,620	13,370	27,090	49.7%
1989	280,000	SMOLT	206,724	1992	13,653	26,487	40,140	66.0%
1990	255,000	SMOLT	164,766	1993	4,108	7,375	11,483	64.2%
1991	613,500	SMOLT	81,673 <sup>1</sup>	1994	1,286	2,519	3,805	66.2%
1992	800,500	SMOLT	828,200					
1993	640,500							
1994	1,020,000							

AVERAGE

61.5%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO SMOLT	# OF SMOLT	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 1,500,000	62%	930,000	5%	46,500	61.5%	28,598

<sup>1</sup> chronic mortalities associated with gas bubble disease; majority of mortalities caused by loss of water in raceways when two pipelines froze up during severe winter weather conditions.



**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**SOCKEYE**

**1994**



TABLE 21. 1994 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

SOCKEYE SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
REDOUBT LAKE FERTILIZATION	OUTER COAST	EVM UNITS <sup>1</sup>	325,000	N/A	1994	N/A	N/A
SNETTISHAM HATCHERY	STEPHENS PASSAGE	27,000,000 EGGS	486,000	365,472	1994	41,222	31,016
AUKE BAY LABORATORY	STEPHENS PASSAGE	N/A	N/A	N/A	1994	3,000	N/A
HAINES 17 MILE, 31 MILE AND CHILKAT LAKE INCUBATION PROJECT	LYNN CANAL	2,000,000	42,000	16,842	1994	4,066	1,632
TOTAL OF CURRENT PROJECTS			853,000	382,314	1994	48,288	32,648

<sup>1</sup> FRED Division estimate based on euphotic volume model (EVM).

TABLE 22. SNETTISHAM HATCHERY  
UNIT: STEPHENS PASSAGE  
SOCKEYE SALMON

PRODUCTION TO DATE

RELEASE DATA					RETURN DATA					
BROOD YEAR	BROOD ORIGIN (LAKE)	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RELEASE SITE (DATE)	RETURN YEAR	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1989	SPEEL	3,698,000	FRY	2,466,000	SWEETHEART (90)	1993	20,000	2,100	22,100	N/A
	CRESCENT	547,000	FRY	216,000	CRESCENT (90)					
	TAHLTAN	2,955,000	FRY	1,042,000	TAHLTAN (90)					
1990	SPEEL	2,338,000	FRY	1,310,000	SWEETHEART (91)	1994	10,206	31,016	41,222	75.2%
	CRESCENT	813,000	FRY	388,000	CRESCENT (91)					
			PRESMOLT	69,000	CRESCENT (91)					
	TAHLTAN	4,511,000	FRY	3,585,000	TAHLTAN (91)					
	TRAPPER	2,314,000	FRY	934,000	TRAPPER (91)					
	TATSAMENIE	985,000	FRY	673,000	TATSAMENIE (91)					
1991	CRESCENT	1,114,000	FRY	552,000	CRESCENT (92)					
			PRESMOLT	83,000	CRESCENT (92)					
			SMOLT	65,717	CRESCENT (93)					
	TAHLTAN	4,246,000	FRY	3,048,000	TAHLTAN (92)					
	TRAPPER	2,953,000	FRY	1,811,000	TRAPPER (92)					
	TATSAMENIE	1,360,000	FRY	1,232,000	TATSAMENIE (92)					
1992	SPEEL	2,851,000	SMOLT	2,006,579	SPEEL (94)					
	CRESCENT	1,498,000	FRY	766,903	SWEETHEART (93)					
			SMOLT	334,000	GILBERT BAY (94)					
	TAHLTAN	5,384,000								
	TATSAMENIE	1,628,000	FRY	909,000	TATSAMENIE (93)					
	TRAPPER	2,579,000	FRY	1,113,000	TRAPPER (93)					
1993	SPEEL	1,702,000								
	CRESCENT	2,467,000	FRY	1,739,605	CRESCENT (94)					
	TAHLTAN	5,911,000	FRY	5,594,741	TAHLTAN (94)					
	TATSAMENIE	1,212,000	FRY	520,947	TATSAMENIE (94)					
	TRAPPER	1,188,000	FRY	916,083	TRAPPER (94)					
	CHILKAT	5,661,000	FRY	4,817,929	CHILKAT (94)					
1994	SPEEL	1,439,074								
	CRESCENT	581,446								
	TAHLTAN	4,117,300								
	TATSAMENIE	1,279,846								
	TRAPPER	1,061,955								
	CHILKAT	6,011,167								

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 27,000,000	1.8% <sup>1</sup>	486,000	75.2%	365,472

<sup>1</sup> assumed survival for lake-stocked fry is 1.8%; survivals (and therefore returns) would be higher for smolt and presmolt programs.



TABLE 23. AUKE BAY LABORATORY<sup>1</sup>  
UNIT: STEPHENS PASSAGE

SOCKEYE SALMON

PRODUCTION TO DATE

BROOD YEAR	BROOD ORIGIN	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER (YEAR) RELEASED	RELEASE SITE <sup>2</sup>	RELEASE YEAR	TOTAL RETURN (YEAR)
1986	AUKE LAKE	21,000	FRY AGE-0 SMOLT	17,000 (87) 1,000(87)	AUKE LAKE (SW)	1987	3,000(94)
1987	AUKE LAKE	200,000	FRY AGE-0 SMOLT AGE-0 SMOLT	104,000(88) 16,000(88) 20,000(88)	AUKE LAKE (FW) (SW)	1988	
1988	AUKE LAKE	200,000	FRY AGE-0 SMOLT AGE-0 SMOLT	11,000(89) 16,000(89) 18,000(89)	AUKE LAKE (FW) (SW)	1989	
1989	AUKE LAKE	80,000	AGE-0 SMOLT	25,000(90) 25,000(90)	(FW) (SW)	1990	
1990	AUKE LAKE	300,000	AGE-0 SMOLT	38,000(91) 100,000(91)	(FW) (SW)	1991	
1991	AUKE LAKE	200,000	AGE-0 SMOLT	54,000(92)	(SW)	1992	
1992	AUKE LAKE	NO EGG TAKE					
1993	AUKE LAKE	NO EGG TAKE					
1994	AUKE LAKE	NO EGGTAKE					

<sup>1</sup> The sockeye salmon program at Auke Bay Laboratory is operated by the National Marine Fisheries Service and is conducted on an experimental basis. Purpose of the experiment defined in Table 22 is to determine the feasibility of increasing sockeye salmon returns to Auke Lake. Studies concentrate on fish size and release timing. Emphasis is on age-0 smolt releases.

<sup>2</sup> The release sites for the age-0 smolt from Auke Bay Laboratory were either fresh water (FW) or saltwater (SW). The freshwater release site was downstream from the weir in Auke Creek. The saltwater release site was in Auke Bay. The timing for releases of age-0 smolt depended on the number of release groups. In 1990 a total of two coded wire tagged groups were released over a 16-day period. In 1991 10 coded wire tagged groups were released over a 42-day period. In 1992 seven coded wire tagged groups were released over a 32-day period.

TABLE 24. HAINES 17 MILE, 31 MILE AND CHILKAT LAKE<sup>1</sup>  
UNIT: LYNN CANAL

SOCKEYE SALMON

PRODUCTION TO DATE

BROOD YEAR	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEAR	ESCAPEMENT	<u>C.P. HARVEST</u>	TOTAL RETURN	HARVEST RATE
1992	408,000	UNFED FRY	201,753 <sup>1</sup>	1993	N/A	<u>N/A</u>	N/A	N/A
1993	602,000	UNFED FRY	588,000	1994	2,434	<u>1,632</u>	4,066	40.1%
1994	598,500	UNFED FRY						

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PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 2,000,000	2.1%	42,000	40.1%	16,842

<sup>1</sup>one incubator lost.

**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**PINK**

**1994**



TABLE 25. 1994 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY

PINK SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST <sup>2</sup>	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST <sup>2</sup>
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 14,000,000	215,600	29,537	1994	297,719	150,037
DIPAC HATCHERIES (3)	STEPHENS PASSAGE	EGGS 50,000,000 <sup>1</sup>	506,250 <sup>3</sup>	N/A	1994	2,776,998	N/A
BURRO CREEK FARMS	LYNN CANAL	EGGS 5,000,000	332,500	166,250	1994	4,884	2,442
GUNNUK CREEK HATCHERY	FREDERICK SOUND	EGGS 5,500,000	84,700	36,506	1994	305,720	176,310
PORT ARMSTRONG HATCHERY	OUTER COAST	EGGS 55,000,000	1,309,000	363,902	1994	1,760,758	500,000
MEDVEJIE CIF	OUTER COAST	EGGS 300,000	4,620	N/A	N/A	N/A	N/A
TOTAL OF CURRENT PROJECTS			2,452,670	596,195	1994	5,146,079	828,789

<sup>1</sup> Combined capacity with Sheep Creek, Kowee Creek, and Gastineau Hatcheries.

<sup>2</sup> Common property harvest data is lacking or incomplete.

<sup>3</sup> Average return for odd- and even-year production.

TABLE 26. SHELDON JACKSON COLLEGE  
UNIT: OUTER COAST

PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1975	1,747,935	UNFED FRY	1,653,666	1977	99,220	N/A	99,220	
1976	1,949,664	UNFED FRY	1,593,184	1978	5,735	N/A	5,735	
1977	10,226,500	UNFED FRY	7,259,016	1979	60,000	N/A	60,000	
1978	2,477,472	UNFED FRY	2,376,944	1980	5,538	N/A	5,538	
1979	9,551,000	UNFED FRY	7,883,250	1981	195,000	N/A	195,000	
1980	2,258,968	UNFED FRY	2,062,139	1982	50,500	1,500 <sup>1</sup>	52,000	
1981	13,697,711	UNFED FRY	10,689,600	1983	160,165	N/A	160,165	
1982	13,774,600	UNFED FRY	9,993,123	1984	166,405	N/A	166,405	
1983	15,637,021	FED/UNFED FRY	14,536,624	1985	237,875	68,897	305,522	22.6%
1984	12,248,695	FED/UNFED FRY	11,070,423	1986	51,973	4,500	56,473	8.0%
1985	11,340,011	UNFED FRY	10,050,822	1987	65,000	1,100	2,100	1.7%
1986	15,015,110	FED/UNFED FRY	14,200,000	1988	8,563	400	8,963	4.5%
1987	14,780,000	FED/UNFED FRY	14,250,000	1989	9,437	563	10,000	5.6%
1988	3,260,000	FED FRY	2,947,500	1990	7,016	234	7,250	3.2%
1989	5,846,122	FED/UNFED FRY <sup>2</sup>	5,400,000	1991	22,587	107	22,744	N/A
1990	3,000,000	FED FRY	2,500,000	1992	18,665	175	18,840	N/A
1991	9,517,109	FED FRY	9,040,000	1993	3,729	28	3,757	N/A
1992	7,236,522	FED FRY	6,790,873	1994	149,482	150,037	297,719	50.4%
1993	916,619	FED FRY	347,000					
1994	10,800,604							

AVERAGE (1985-1990)

13.7%<sup>4</sup>

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLINGS	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 14,000,000 <sup>3</sup>	77%	10,780,000	2%	215,600	5.8%	29,537

<sup>1</sup> Sport catch from beach. Commercial catch unknown.

<sup>2</sup> 600,000 unfed fry.

<sup>3</sup> Permitted for 20 million pink/chum, with 6 million chum maximum.

<sup>4</sup> Excludes harvest rates for 1991, 1992, and 1993 that were less than 1%

TABLE 27. MEDVEJIE CENTRAL INCUBATION FACILITY  
UNIT: OUTER COAST.

PINK SALMON<sup>1</sup>

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1991	333,000	UNFED FRY FED FRY	32,000 132,000					
1992	146,000	UNFED FRY	131,600					
1993	48,800	UNFED FRY	31,600					
1994	214,600							

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 300,000	77%	231,000	2%	4,620	N/A	N/A

<sup>1</sup> For mitigation of Medvejie Creek.

TABLE 28. SHEEP CREEK, KOWEE CREEK AND GASTINEAU HATCHERIES – DIPAC<sup>1</sup>  
UNIT: STEPHENS PASSAGE  
PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>2</sup>	SHA TOTAL RETURN <sup>3</sup>	HARVEST RATE <sup>2</sup>
1978	2,370,709		2,100,000	1980	6,000	N/A	6,000	N/A
1979	2,800,500		2,057,152	1981	14,000	N/A	14,000	N/A
1980	3,525,000		3,181,680	1982	16,337	N/A	16,337	N/A
1981	13,180,224		12,020,310	1983	106,000	N/A	106,000	N/A
1982	18,807,420		17,678,975	1984	60,000	N/A	60,000	N/A
1983	40,808,141	FED FRY	38,364,894	1985	442,731	N/A	442,731	N/A
1984	20,152,543	FED FRY	18,931,380	1986	22,577	N/A	22,577	N/A
1985	38,096,796	FED/UNFED FRY	36,895,252	1987	794,750	N/A	794,750	N/A
1986	9,695,196	FED FRY	8,360,000	1988	37,109	N/A	37,109	N/A
1987	42,200,000	FED FRY	41,630,000	1989	77,184	N/A	83,699	N/A
1988	17,111,000	FED FRY	15,032,297	1990	61,203	N/A	65,485	N/A
1989	27,944,844	FED FRY	27,685,924	1991	332,338	N/A	342,338	N/A
1990	32,226,896	FED FRY	31,104,382	1992	972,925	N/A	972,925	N/A
1991	50,858,829	FED FRY	47,282,692	1993	28,075	N/A	28,992	N/A
1992	51,011,430	FED FRY	48,429,147	1994	2,766,100	N/A	2,776,998	N/A
1993	9,946,543	FED FRY	8,923,682					
1994	8,992,749							

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 50,000,000 <sup>4</sup>	90%	45,000,000	0.25% even 2.00% odd	112,500 900,000.	N/A	N/A

<sup>1</sup> Since 1990 Kowee Creek Hatchery has been used by the University of Alaska for research; production has been transferred to Gastineau & Sheep Creek hatcheries.

<sup>2</sup> Common property harvest data is lacking or incomplete.

<sup>3</sup> Special Harvest Area (SHA) return includes sport harvest estimates from 1989 on.

<sup>4</sup> Permit for 50,000,000 pink salmon eggs combined for all three facilities.



TABLE 29. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL

PINK SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1980	870,400	ALEVIN <sup>1</sup>	652,800	1982	2,450	N/A	2,450	
1981	1,107,000	ALEVIN <sup>1</sup>	1,009,850 <sup>2</sup>	1983	5,000	N/A	5,000	
1982	841,100	FED FRY	640,000	1984	3,500	N/A	3,500	
1983	1,725,750	FED FRY	1,386,511	1985	33,050	N/A	33,050	
1984	1,521,000	FED FRY	1,445,560	1986	2,288	2,288	4,576	50.0%
1985	2,359,400	FED FRY	2,242,374	1987	4,800	4,700	9,500	49.5%
1986	711,080	FED FRY	670,000	1988	7,300	7,400	14,700	50.3%
1987	2,530,000	FED FRY	2,330,000	1989	2,186	2,186	4,372	50.0%
1988	4,550,000	UNFED FRY <sup>3</sup>	685,284	1990	1,202	1,202	2,404	50.0%
1989	3,189,000	UNFED FRY	2,281,968	1991	506	506	1,012	50.0%
1990	2,106,797	UNFED FRY	1,695,199	1992	4,000	4,000	8,000	50.0%
1991	272,270	UNFED FRY	242,871	1993	3	3	6	50.0%
1992	1,932,000	UNFED FRY	1,582,300	1994	2,442	2,442	4,884	50.0%
1993	1,400	UNFED FRY	251,372 <sup>5</sup>					
1994	1,044,000							

AVERAGE

50.0%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,000,000 <sup>4</sup>	95%	4,750,000	0.7	332,500	50.0%	166,250

<sup>1</sup> Transplanted to Burro and Pullen Creeks when water supply froze.

<sup>2</sup> Number estimated from eyed egg count.

<sup>3</sup> Unfed fry released into Burro Creek on January 30, 1989, when hatchery froze.

<sup>4</sup> Currently permitted for 10,000,000 pink and chum combined, 5,000,000 each.

<sup>5</sup> Includes 250,000 DIPAC fry

**TABLE 30. GUNNUK CREEK HATCHERY  
UNIT: FREDERICK SOUND  
PINK SALMON**

**PRODUCTION TO DATE**

RELEASE DATA				RETURN DATA				
BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1977	30,000	UNFED FRY	5,000	1979	N/A	N/A	N/A	
1980	16,000		0 <sup>1</sup>	1982	N/A	N/A	N/A	
1981	0 <sup>2</sup>		N/A	N/A	N/A	N/A	N/A	
1982	1,018,000	FED FRY	43,227	1984	1,000	N/A	1,000	
1983	1,044,000	FED FRY	103,322	1985	10,000	N/A	10,000	
1984	0	N/A	N/A	1986	11,222	300	11,522	2.6%
1985	3,300,356	FED FRY	3,066,000	1987	55,000	1,200	56,200	2.1%
1986	3,075,592	FED FRY	2,870,000	1988	39,000	450	40,100	1.1%
1987	4,500,000	FED FRY	4,160,000	1989	58,041	250	58,291	0.4%
1988	4,490,000	FED/UNFED FRY	4,193,240	1990	149,155	45,000	194,655	23.1%
1989	5,991,898	FED/UNFED FRY	3,882,526 <sup>3</sup>	1991	89,689	65,400	155,089	42.1%
1990	7,170,597	FED FRY	6,421,800	1992	69,516	92,340	161,856	57.1%
1991	5,980,478	FED FRY	5,600,720	1993	26,268	14,500	40,768	35.6%
1992	6,209,110	FED FRY	4,299,765	1994	129,410	176,310	305,720	57.7%
1993	2,267,315	UNFED FRY	1,995,945					
1994	NO EGG TAKE							

AVERAGE (1990-19943)

43.1%

**PROJECTED PRODUCTION AT FULL CAPACITY**

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,500,000	77%	4,235,000	2%	84,700	43.1%	36,506

<sup>1</sup> All destroyed due to bacterial septicemia.

<sup>2</sup> New hatchery construction in progress.

<sup>3</sup> Only 100,000 unfed fry released.

TABLE 31. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

PINK SALMON

PRODUCTION TO DATE

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1983	9,000,000	UNFED FRY	7,400,000	1985	74,000	74,000	148,000	50.0%
1984	11,160,800	FED FRY	7,312,270	1986	30,098	30,098	60,196	50.0%
1985	13,623,330	FED FRY	9,763,780	1987	276,000	13,800	289,800	4.7%
1986	14,521,980	FED FRY	12,350,000	1988	24,100	4,200	28,300	14.8%
1987	20,960,000	FED FRY	19,370,000	1989	75,066	51,273	126,339	40.6%
1988	17,150,000	FED FRY	16,035,760	1990	903,378	210,035	1,113,413	18.9%
1989	24,004,010	FED FRY	22,420,0560	1991	1,097,622	287,530	1,385,152	20.7%
1990	60,156,640	FED FRY	50,115,670	1992	2,041,595	680,532	2,722,127	25.0%
1991	41,849,490	FED FRY	39,696,810	1993	358,967	119,656	478,623	25.0%
1992	58,322,360	FED FRY	51,188,670	1994	1,260,758	500,000	1,760,758	28.4%
1993	58,667,840	FED FRY	43,000,000					
1994	59,448,000							

AVERAGE

27.8%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 85,000,000	77%	65,450,000	2%	1,309,000	27.8%	363,902



**NORTHERN SOUTHEAST ALASKA ENHANCEMENT PROJECTS**

**CHUM**

**1994**

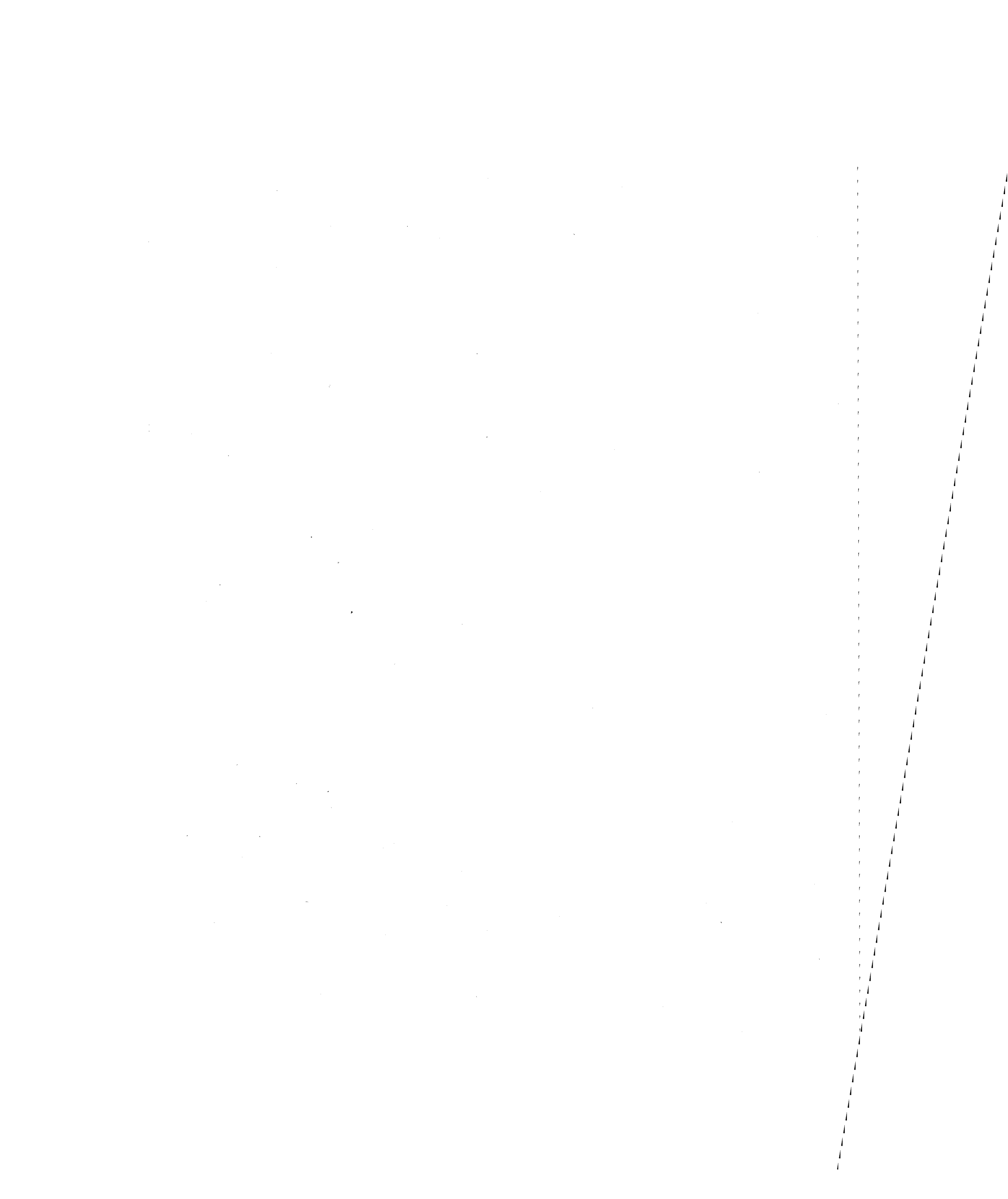


TABLE 32. 1994 STATUS OF NORTHERN SOUTHEAST ENHANCEMENT PROJECTS - SUMMARY  
CHUM SALMON

PROJECTED FULL PRODUCTION

CURRENT PRODUCTION

OPERATIONAL PROJECTS	UNIT	PRODUCTION BASIS	TOTAL RETURN	COMMON PROPERTY HARVEST	RETURN YEAR	TOTAL RETURN	COMMON PROPERTY HARVEST
MEDVEJIE HATCHERY	OUTER COAST	EGGS 42,000,000	646,800	314,991	1994	1,306,387	959,301
SHELDON JACKSON COLLEGE HATCHERY	OUTER COAST	EGGS 6,000,000	92,400	46,385	1994	324	N/A
GUNNUK CREEK HATCHERY	FREDERICK SOUND	EGGS 59,500,000	916,300	322,538	1994	71,185	31,673
DIPAC HATCHERIES (3)	STEPHENS PASSAGE/ LYNN CANAL	EGGS 141,000,000	1,903,500	1,043,118	1994	768,215	371,319
HIDDEN FALLS HATCHERY	ICY/CHATHAM	EGGS 141,000,000	2,171,400	1,483,066	1994	3,207,872	2,855,275
BURRO CREEK HATCHERY	LYNN CANAL	EGGS 5,000,000	350,000	175,000	1994	38	19
CHILKAT SPAWNING CHANNEL	LYNN CANAL	EGGS 5,000,000	10,000	N/A	1994	N/A	N/A
PORT CAMDEN INCUBATOR BOXES	FREDERICK SOUND	EGGS 10,000,000	60,200	N/A	1994	N/A	N/A
HERMAN CREEK SPAWNING CHANNEL	LYNN CANAL	EGGS 5,000,000	10,000	N/A	1994	N/A	N/A
HAINES 17/30/31 MILE INCUBATOR BOXES	LYNN CANAL	EGGS 1,300,000	9,750	3,900	1994	N/A	1,740
TOTAL OF CURRENT PROJECTS			6,170,350	3,388,998	1994	5,354,021	4,219,327

<sup>1</sup> Special harvest area return.

TABLE 33. MEDVEJIE CENTRAL INCUBATION FACILITY  
UNIT: OUTER COAST  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1981	255,855	FED FRY	233,697	1984	889	4	893	0.4%
1982	2,963,000	FED FRY	2,460,713	1985	39,300	606	39,906	1.5%
1983	2,643,000	FED FRY	2,558,282	1986	116,743	65,000	181,743	35.8%
1984	6,723,300	FED FRY	6,232,400	1987	126,400	7,300	433,700	1.7%
1985	26,796,800	FED FRY	25,223,405	1988	40,150	5,650	45,800	12.3%
1986	31,013,000	FED FRY	27,516,200	1989	100,833	30,574	131,407	23.3%
1987	28,650,000	FED FRY	28,140,000	1990	93,528	25,422	118,950	21.4%
1988	17,840,000	FED FRY	16,329,300	1991	53,962	0	53,962	0.0%
1989	38,269,000	FED FRY	34,405,100	1992	163,639	144,440	508,079	46.9%
1990	33,794,000	FED FRY	29,648,000 <sup>1</sup>	1993	350,798	1,283,576	1,634,554	78.5%
1991	26,500,000	FED FRY	23,354,400	1994	346,348	959,301	1,306,387	73.4
1992	32,259,900	FED FRY	29,916,000					
1993	31,839,300	FED FRY	29,264,800					
1994	33,808,500 <sup>1</sup>							

AVERAGE

48.7%<sup>2</sup>

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FINGERLING	# OF FINGERLING	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 42,000,000	77%	32,340,000	.02%	646,800	48.7%	314,991

<sup>1</sup> Includes 12,360,000 Hidden Falls chum.

<sup>2</sup> 5-year average taken from 1989-1993 returns, excluding 1991 when no common-property harvest was indicated.



TABLE 34. SHELDON JACKSON COLLEGE HATCHERY  
UNIT: OUTER COAST  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1976	206,821	FED/UNFED FRY	186,887	1979	210	N/A	N/A	
1978	691,340	UNFED FRY	646,852	1981	219	N/A	N/A	
1980	118,000	FED FRY	84,072	1983	10	N/A	N/A	
1981	133,868	FED/UNFED FRY	84,970	1984	465	N/A	N/A	
1982	1,178,976	FED FRY	929,993	1985	601	N/A	N/A	
1983	792,556	FED FRY	551,150	1986	2,845	450	2,935	15.3%
1984	2,824,824	FED FRY	2,314,613	1987	4,300	0	4,300	N/A
1985	2,760,394	UNFED FRY	2,244,555	1988	1,823	0	1,823	N/A
1986	1,884,662	FED FRY	1,600,000	1989	444	6	450	1.3%
1987	690,000	FED FRY	450,000	1990	937	63	1,000	6.3%
1988	940,000	FED FRY	827,000	1991	23	0	23	N/A
1989	386,000	FED FRY	270,000	1992	132	0	132	N/A
1990	348,000	FED FRY	280,000	1993	1,459	1,470	2,929	50.2%
1991	4,985	FED FRY	4,000	1994	324	N/A	324	N/A
1992	95,604	FED FRY	88,000					
1993	896,400	FED FRY						
1994	217,672							

AVERAGE<sup>1</sup>

50.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 6,000,000 <sup>2</sup>	77%	4,620,000	.02%	92,400	50.2%	46,385

<sup>1</sup> data is insufficient for long-term average; the most recent 1993 harvest rate is used.

<sup>2</sup> permitted for 16,000,000 pink/chum; chum maximum 6,000,000.

TABLE 35. PORT ARMSTRONG HATCHERY  
UNIT: OUTER COAST

CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1984	2,258,400	FED/UNFED FRY	1,184,267	1987	101	0	101	0
1985	2,702,250	FED FRY	1,626,400	1988	117	12	119	11.0%
1986	2,171,103	FED FRY	1,980,000	1989	208	23	231	10.0%
1987	1,510,000	FED FRY	1,290,000	1990	1,199	120	1,319	9.1%
1988	50,000	FED FRY	42,500	1991	1,752	203	1,955	10.4%
1989	157,303	FED FRY	141,921	1992	N/A	N/A	N/A	N/A
1990	855,400	FED FRY	794,673					
1991	444,353	FED FRY	423,000					
1992	NO EGGS TAKEN	N/A	N/A					
1993	NO EGGS TAKEN	CHUM PROGRAM DISCONTINUED						

1988-1990 AVERAGE

10.1%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 10,000,000	77%	7,700,000	.02%	154,000	10.0%	15,554

TABLE 36. GUNNUK CREEK HATCHERY  
UNIT: FREDERICK SOUND  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1979	16,000		1,000	1982	N/A	N/A	N/A	
1980	129,000		0 <sup>1</sup>	1983	0	N/A	N/A	
1981	0		0	1984	0	N/A	N/A	
1982	662,000	FINGERLING	8,651	1985	0	N/A	N/A	
1983	1,070,000		55,000	1986	292	30	322	9.3%
1984	2,443,107	UNFED FRY	1,982,000	1987	287	130	417	31.2%
1985	8,410,256	FED/UNFED FRY	8,108,715	1988	3,570	340	3,910	8.7%
1986	11,343,710	FED/UNFED FRY	10,810,000	1989	19,317	500	19,817	2.5%
1987	10,860,000	FED/UNFED FRY	10,750,000	1990	46,166	2,000	48,168	4.2%
1988	10,220,000	FED/UNFED FRY	9,879,298	1991	55,357	700	55,957	1.3%
1989	12,008,152 <sup>3</sup>	FED/UNFED FRY	5,643,978	1992	58,700	1,470	60,170	2.4%
1990	14,322,164	FED FRY	6,299,970	1993	54,917	19,169	74,086	25.9%
1991	14,255,795	FED/UNFED FRY	13,119,225	1994	39,512	31,673	71,185	44.5%
1992	16,495,105	UNFED FRY FED FRY	668,860 14,387,650					
1993	16,291,285	UNFED FRY FED FRY	235,150 13,745,440					
1994	20,952,435							

1993-1994 AVERAGE

35.2%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 59,500,000 <sup>2</sup>	77%	45,815,000	.02	916,300	35.2%	322,538

<sup>1</sup> All destroyed due to bacterial septicemia.

<sup>2</sup> Pink/chum capacity of 65,000,000; up to 5,500,000 can be pinks.

<sup>3</sup> Chlorine contamination by City of Kake water treatment plant resulted in 50% egg mortality.

TABLE 37. DOUGLAS ISLAND PINK AND CHUM<sup>1</sup>

UNIT: STEPHENS PASSAGE/LYNN CANAL

CHUM SALMONPRODUCTION TO DATE

(includes Sheep Creek, Kowee Creek, and Gastineau Hatcheries)

## RELEASE DATA

## RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>2</sup>	SHA TOTAL RETURN <sup>3</sup>	HARVEST RATE <sup>2</sup>
1978	487,488	UNFED FRY	0	1982	300	N/A	300	N/A
1979	251,108	UNFED FRY	224,014	1983	500	N/A	500	N/A
1980	965,718	UNFED FRY	954,281	1984	2,000	N/A	2,000	N/A
1981	764,000	UNFED FRY	619,882	1985	1,178	N/A	1,178	N/A
1982	1,106,000	UNFED FRY	1,026,258	1986	2,782	N/A	2,782	N/A
1983	1,307,660	UNFED FRY	1,229,920	1987	4,107	N/A	4,107	N/A
1984	4,582,713	FED FRY	4,291,652	1988	37,791	N/A	37,791	N/A
1985	7,220,550	FED FRY	6,810,463	1989	32,488	2,084	34,572	N/A
1986	19,910,000	FED FRY	18,900,000	1990	184,710	3,329	188,039	N/A
1987	19,750,000	FED FRY	18,350,000	1991	171,269	5,100	176,369	N/A
1988	48,738,140	FED FRY	43,924,642	1992	171,909	151,870	323,779	46.9%
1989	19,201,203	FED FRY	22,961,248 <sup>4</sup>	1993	78,796	177,628	256,474	69.3%
1990	99,861,851	FED FRY	102,230,000 <sup>5</sup>	1994	396,896	371,319	768,215	48.3%
1991	89,713,992	FED FRY	90,098,374 <sup>6</sup>					
1992	98,889,002	FED FRY	94,603,010 <sup>7</sup>					
1993	74,177,586 <sup>8</sup>	FED FRY	67,620,503					
1994	117,749,973							

1992-1993 AVERAGE

54.8%

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 141,000,000	90%	126,900,000	1.5%	1,903,500	54.8%	1,043,118

<sup>1</sup> Since 1990 Kowee Creek Hatchery has been a University of Alaska research facility and production has been transferred to Sheep and Gastineau Hatcheries.<sup>2</sup> Common property harvest data is lacking or incomplete.<sup>3</sup> Special harvest area returns include sport fish harvest from 1984 onward.<sup>4</sup> 9,021,460 fry were transferred from Snettisham Hatchery and not reflected in egg take.<sup>5</sup> 8,934,300 fry were transferred from Snettisham for Boat Harbor and Limestone releases and not reflected in egg take.<sup>6</sup> 6,720,000 fry were transferred from Hidden Falls and not reflected in egg take.<sup>7</sup> Hidden Falls stock released at Boat Harbor (i.e., 9,545,112) are not included.<sup>8</sup> Includes 10,253,292 eggs from Hidden Falls for release at Boat and Amalga Harbors.

TABLE 38. HIDDEN FALLS HATCHERY  
UNIT: ICY/CHATHAM STRAITS  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1978	2,524,577	FED/UNFED FRY	1,889,184	1981	3,436		3,431	
1979	4,255,954	FED/UNFED FRY	3,577,700	1982	40,056	17,974	58,030	30.9%
1980	9,929,196	FED/UNFED FRY	9,013,938	1983	43,000	72,334	118,587	70.0%
1981	11,921,742	FED/UNFED FRY	10,291,351	1984	60,000	561,793	616,193	91.2%
1982	23,224,924	FED/UNFED FRY	18,909,761	1985	70,000	380,567	450,587	84.5%
1983	31,800,000	FED/UNFED FRY	28,500,000	1986	70,500	594,819	664,813	89.5%
1984	35,900,000	FED/UNFED FRY	30,050,000	1987	87,000	434,453	543,639	79.9%
1985	58,000,000	FED/UNFED FRY	45,300,000	1988	216,377	205,594	421,971	49.0%
1986	65,600,000	FED FRY	40,330,000	1989	104,779	50,184	154,963	32.4%
1987	73,500,000	FED FRY	52,755,717	1990	222,131	257,600	479,731	53.7%
1988	67,800,000	FED FRY	60,737,000	1991	290,574	579,329	869,903	66.0%
1989	84,392,787	FED FRY	62,500,000	1992	288,890	724,849	1,013,739	71.5%
1990	92,147,569	FED FRY	64,275,400	1993	353,923	1,437,282	1,791,205	80.2%
1991	82,099,645 <sup>1</sup>	FED FRY	56,129,200	1994	352,597	2,855,275	3,207,872	89.0%
1992	91,190,098 <sup>2</sup>	FED FRY	62,442,800					
1993	102,119,530	FED FRY	60,222,973					
1994	93,370,000							

AVERAGE

68.3%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO FED FRY	# OF FED FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 141,000,000	77%	108,570,000	.02	2,171,400	68.3%	1,483,066

<sup>1</sup> 14,000,000 eggs transferred to Medveje Central Incubation Facility (MCIF).

<sup>2</sup> Includes 14,082,500 for MCIF and 10,060,300 for Boat Harbor.

TABLE 39. BURRO CREEK HATCHERY  
UNIT: LYNN CANAL  
CHUM SALMON

PRODUCTION TO DATE

RELEASE DATA

RETURN DATA

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST <sup>1</sup>	TOTAL RETURN	HARVEST RATE <sup>1</sup>
1980	250,00	ALEVIN <sup>2</sup>	140,000	1983	0	N/A	N/A	
1981	410,00	ALEVIN <sup>2</sup>	315,400	1984	9	N/A	N/A	
1982	0		0	1985	102	N/A	N/A	
1983	134,724	FRY	89,075	1986	181	181	362	50.0%
1984	567,716	FRY	461,060	1987	220	242	462	52.4%
1985	304,200	FED FRY	286,102	1988	328	328	656	50.0%
1986	592,955	FED FRY	560,000	1989	8	N/A	N/A	N/A
1987	560,000	FED FRY	500,000	1990	41	41	82	50.0%
1988	599,000	FED FRY	501,414	1991	556	556	1,112	50.0%
1989	118,800	UNFED FRY	43,605	1992	90	90	180	50.0%
1990	27,000	UNFED FRY	6,286	1993	86	86	172	50.0%
1991	423,000	UNFED FRY	374,524	1994	19	19	38	50.0%
1992	73,800	FED FRY	71,600					
1993	61,200	UNFED FRY	54,070					
1994	10,800							

AVERAGE

50.0%

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % SURVIVAL FROM EMERGENT FRY TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 5,000,000 <sup>3</sup>	0.7%	350,000	50.0%	175,000

<sup>1</sup>"Common Property Harvest" and "Harvest Rate" based on operators estimates in Annual Reports.

<sup>2</sup> Transplanted to Burro and Pullen Creeks when water supply froze.

<sup>3</sup> Permit is for 10,000,000 pink and chum combined, or 5,000,000 each.

TABLE 40. 24-MILE CHILKAT SPAWNING CHANNEL  
UNIT: LYNN CANAL

CHUM SALMON

PRODUCTION TO DATE

BROOD YEAR	ESCAPEMENT	NUMBER OF FEMALES	EGGS DEPOSITED	SPRING FRY PRODUCED	POSSIBLE ADULT CONTRIBUTION 1% RETURN
1983	463	185	463,000	92,600	926
1984	1,505	602	1,505,000	301,000	3,010
1985	1,735	694	1,735,000	347,000	3,470
1986	1,283	513	1,283,000	256,600	2,566
1987	5,000	2,000	5,000,000	1,000,000	10,000
1988	2,500	1,000	2,500,000	500,000	5,000
1989	1,300	520	1,300,000	260,000	2,600
1990	1,836	734	1,836,000	367,000	3,670
1991	1,230	492	1,230,000	246,000	2,460
1992	100	45	112,500	22,500	225
1993	85	38	95,625	19,125	191
1994	730	315	787,500	157,500	1,575

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ASSUMED HARVEST RATE	C.P. HARVEST
EGGS 5,000,000	20%	1,000,000	1%	10,000	N/A	N/A

TABLE 41. PORT CAMDEN INCUBATION BOXES  
UNIT: FREDERICK SOUND

CHUM SALMON

PRODUCTION TO DATE

**RELEASE DATA**

**RETURN DATA**

BROOD YEAR	NUMBER EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	ESCAPEMENT	C.P. HARVEST	TOTAL RETURN	HARVEST RATE
1985	136,400	UNFED FRY	33,962	1988	N/A	N/A	N/A	N/A
1986	200,000	UNFED FRY	198,000	1989	N/A	N/A	N/A	N/A
1987	605,000	UNFED FRY	599,000	1990	N/A	N/A	N/A	N/A
1988	1,350,000	UNFED FRY	1,309,390	1991	N/A	N/A	N/A	N/A
1989	1,350,000 <sup>1</sup>	UNFED FRY	7298000	1992	N/A	N/A	N/A	N/A
1990	2,675,000	UNFED FRY	2,399,000	1993	N/A	N/A	N/A	N/A
1991	4,607,000	UNFED FRY	4,212,000	1994	N/A	N/A	N/A	N/A
1992	6,000,000	UNFED FRY	4,440,000					
1993	5,262,500	UNFED FRY	4,979,350					
1994	6,015,000							

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN	ACTUAL HARVEST RATE	C.P. HARVEST
EGGS 10,000,000	86 %	8,600,000	0.007 %	60,200	N/A	N/A

<sup>1</sup> 600,000 eggs died from clogged water intake.



TABLE 42. HERMAN CREEK SPAWNING CHANNEL  
UNIT: LYNN CANAL  
CHUM SALMON

PRODUCTION TO DATE

BROOD YEAR	ESCAPEMENT	NUMBER OF FEMALES	EGGS DEPOSITED	SPRING FRY PRODUCED	ADULT CONTRIBUTION 1% RETURN
1989	1,050	515	1,131,900	622,337	6,223
1990	2,991	1,496	3,290,100	700,345	7,003
1991	4,600	2,254	4,958,800	1,139,002	11,390
1992	5,500	2,695	5,929,000	1,185,000	11,850
1993	4,500	2,205	4,851,000	1,067,220	10,672
1994	8,070	3,600	9,000,000	1,980,000	19,800

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED SURVIVAL TO EMERGENT FRY	# OF EMERGENT FRY	ASSUMED % SURVIVAL TO ADULT	TOTAL RETURN
EGGS 5,000,000	20%	1,000,000	1%	10,000

<sup>1</sup> Number estimated using 20% survival egg to fry, 2,000 egg fecundity, and 50% male/female ratio.

TABLE 43. HAINES 17/30/31 MILE INCUBATOR BOXES  
UNIT: LYNN CANAL

CHUM SALMON

PRODUCTION TO DATE

BROOD YEAR	# OF EGGS	LIFE STAGE AT RELEASE	NUMBER RELEASED	RETURN YEARS	EXPECTED # RETURN	<u>C.P. HARVEST</u>	TOTAL RETURN
1991	817,300	UNFED FRY	582,925 <sup>1</sup>	1995-1997	1,937 to 3,874	<u>N/A</u>	N/A
1992	668,800 <sup>2</sup>	UNFED FRY	691,208	1996-1998	3,177 to 6,345	<u>N/A</u>	N/A
1993	1,007,500	UNFED FRY	985,625	1997-1999	4,037 to 8,075	<u>N/A</u>	N/A
1994	900,000	UNFED FRY	855,000	1998-2000	4,275 to 8,550	<u>N/A</u>	N/A

PROJECTED PRODUCTION AT FULL CAPACITY

PRODUCTION BASIS	ASSUMED % ADULT SURVIVAL	TOTAL RETURN	ASSUMED HARVEST RATE	C.P. HARVEST
EGGS 1,300,000	0.75 %	9,750	40.0 %	3,900

<sup>1</sup> boxes froze

<sup>2</sup> 1992 egg take for 17-mile incubation boxes is unavailable

**SECTION 3.**

**NORTHERN SOUTHEAST ALASKA HABITAT  
PROTECTION AND IMPROVEMENT PROJECTS**

**ALL SPECIES**

**1994**



TABLE 44. 1993 STATUS OF NORTHERN SE HABITAT RESTORATION PROJECTS

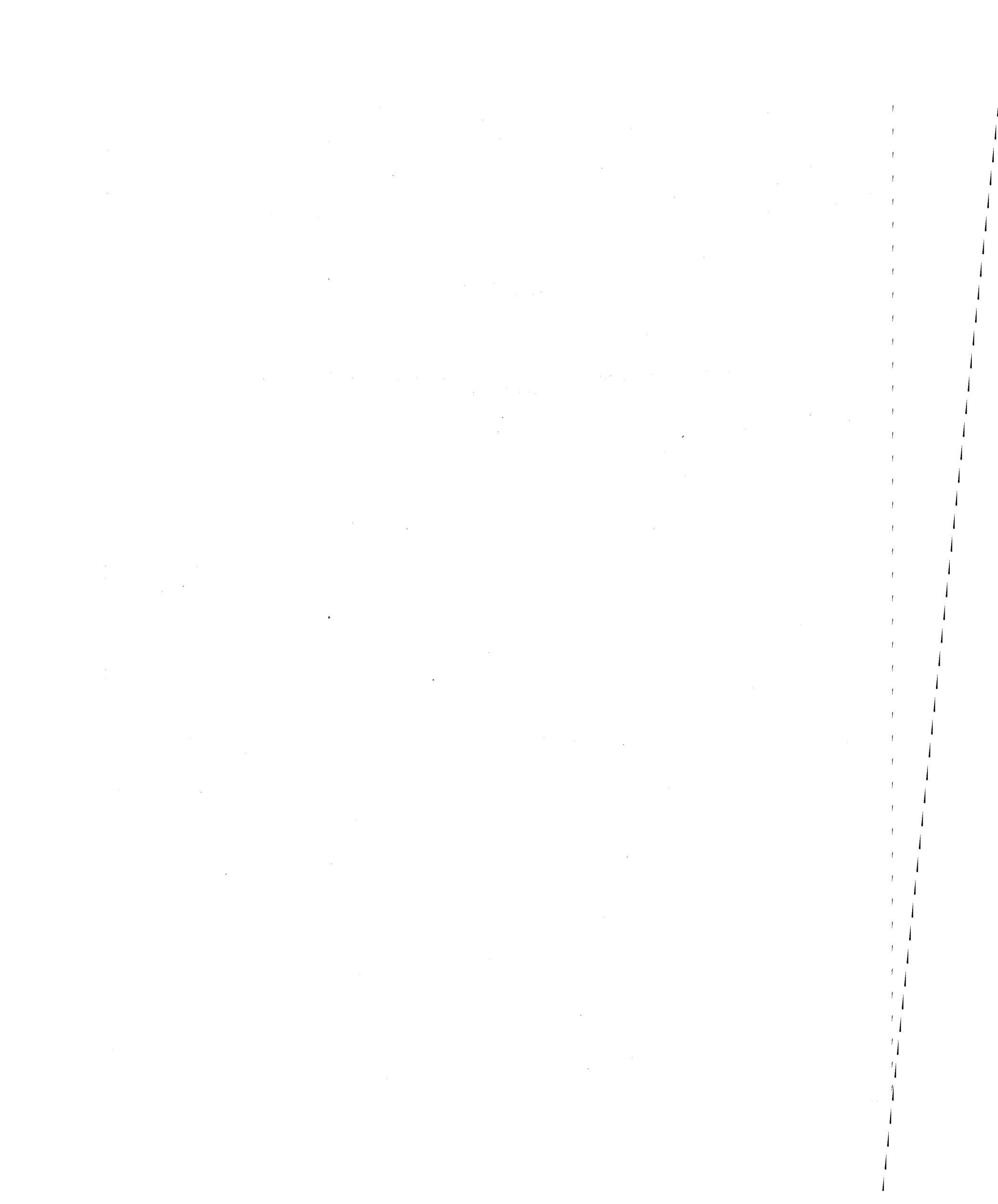
SPECIES	TITLE	STATUS	NARRATIVE
Chinook	Big Boulder Creek rehabilitation plan	Ongoing	Continue to monitor and execute planned activities
Coho	Ophir Creek flow improvement project	Ongoing	Continue to improve flow characteristics
All	Alaska Water Watch	Ongoing	Water quality sampling at Duck & Pullen Creeks
All	Inventory/catalogue all streams in SE Alaska	Ongoing	Continue to update anadromous streams



**SECTION 4.**

**NORTHERN SOUTHEAST ALASKA COMPREHENSIVE SALMON PLAN  
GAP ANALYSIS**

**1994**





**TABLE 45. GAP ANALYSIS FOR SOUTHEAST ALASKA SALMON FISHERIES, 1994**

**5-Year Average Harvest, Projected Harvest Potentials  
and Harvest Objectives Compared**

Projected Average Harvest Potential With Current Projects								
Species	5-Year Average Harvest <sup>1</sup>	Wild <sup>2</sup>	Enhanced Potential <sup>3</sup>		Total Enhanced Potential	Projected Potential Harvest	Harvest Objective <sup>4</sup>	Gap
			<u>Northern SE</u>	<u>Southern SE</u>				
Chinook	287,700	263,000	40,682	92,840	133,522	396,522	537,000	140,478
Coho	3,827,800	1,200,000	447,622	639,084	1,086,706	2,286,706	2,650,000	363,294
Sockeye	2,494,200	800,000	382,314	300,430	682,744	1,482,744	2,100,000	617,256
Pink	48,851,000	16,500,000	596,195	377,300	973,495	17,473,495	30,000,000	12,526,505
Chum	5,751,700	1,700,000	3,388,998	1,774,413	5,163,411	6,863,411	9,700,000	2,836,589

<sup>1</sup> 1990-1994 (rounded to nearest hundred)

<sup>2</sup> Best estimate of ADF&G, Commercial Fisheries Division for long-term average wild harvest.

<sup>3</sup> From 1994 enhancement project summary tables for northern and southern Southeast Alaska.

<sup>4</sup> From Comprehensive Salmon Plan, Phase II. NSE. December 1982.

**TABLE 46 GAP ANALYSIS FOR SOUTHEAST ALASKA SALMON FISHERIES, 1994**

**5-Year Average Harvest, 1994 Harvest Estimates by Operators  
and Harvest Objectives Compared**

Projected Average Harvest Potential With Current Projects								
Species	5-Year Average Harvest <sup>1</sup>	Wild <sup>2</sup>	1994 Enhanced Fish Contributions <sup>3</sup>		Total Enhanced Potential	Projected Potential Harvest	Harvest Objective <sup>4</sup>	1994 Gap
			<u>Northern SE</u>	<u>Southern SE</u>				
Chinook	287,700	263,000	21,192	19,885	41,077	304,077	537,000	232,923
Coho	3,827,800	1,200,000	419,699	346,272	765,971	1,965,971	2,650,000	684,029
Sockeye	2,494,200	800,000	32,648	152,511	185,159	985,159	2,100,000	1,114,841
Pink	48,851,000	16,500,000	828,789	546,542	1,375,331	17,875,331	30,000,000	12,124,669
Chum	5,751,700	1,700,000	4,219,327	714,913	4,934,240	6,634,240	9,700,000	3,065,760

<sup>1</sup> 1990-1994

<sup>2</sup> Best estimate of ADF&G, Commercial Fisheries Division for long-term average wild harvest.

<sup>3</sup> Hatchery operator estimates from 1994 enhancement project summary tables for northern and southern Southeast Alaska.

<sup>4</sup> From Comprehensive Salmon Plan, Phase II. NSE. December 1982.

**SECTION 5.**

**NORTHERN SOUTHEAST ALASKA COMPREHENSIVE SALMON PLAN  
5-YEAR ACTION PLAN**

**ALL SPECIES**

**1994**



## FIVE YEAR ACTION PLAN

The 5-year action plan consists of those salmon enhancement projects that have passed preliminary screening and have been recommended for action (i.e., implementation or feasibility study) by the Northern Southeast Regional Planning Team during the next five years (1994-1998). Some of the projects listed are already funded or are included in budget proposals of the various agencies, while others are not. Opportunities recommended are categorized as either high priority (i.e., "A") or low priority (i.e., "B"). The 5-year action plan also provides the updated status of ongoing projects; its intent is to guide budget development toward priority projects. Tables 47 through 52 display current projects by species as well as their priority categorization. The 5-year action plan will be updated periodically to reflect current directions recommended by the NSERPT.

Table 47. Chinook Salmon Projects and Priorities, 1994-1998.

Chinook Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Habitat restoration-Boulder Creek		A	
Fishery Creek fish pass/stocking	B		
Ward Creek fish pass/stocking	B		
Wheeler Creek (Game Cove) fish pass/stocking	B		
Port Armstrong Hatchery expansion	A		
Indian River fish pass/stocking	A		
Farragut Lake stocking	B		
Crystal Lake Hatchery ozonation	A		

Table 48. Coho Salmon Projects and Priorities, 1994-1998.

Coho Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Taku River rearing habitat	B		
Slippery Creek fish pass	B		
Portage Creek fish pass	A		
Dean Creek fish pass	A		
Hasselborg/Salt Lake smolt evaluation			B
Greens Creek fishway evaluation	A		
Fishery Creek fishway	B		
Chilkat/Chilkoot rearing habitat protection		B	
Chilkat River rearing habitat improvement		B	
Herbert/Eagle River rearing habitat	B		
Deer Lake bioenhancement enhancement	A		
Baranof Lake stocking	A		
Deep Inlet coho smolt release	A		
Shamrock Bay coho smolt release	A		
Medvejie coho smolt release	A		
Suntaheen Creek fish pass	A		
Brown's Creek fish pass	A		
Large woody debris replacement in Kadake and Saginaw Watersheds		A	
Lava Falls Creek	A		
Whiterock Creek fish pass/habitat monitoring	A		
Game Creek habitat improvement		A	
Kennel Creek habitat improvement		A	
Neka River habitat improvement and enhancement	B	B	
Davidson Creek fish pass/bioenhancement	A		

Table 49. Sockeye Salmon Projects and Priorities, 1994-1998.

Sockeye Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Snettisham CIF	A		
Surveillance of unmonitored or small sockeye systems			A
Redoubt Lake enrichment/stocking	A		
Chilkat Lake sockeye salmon instream incubation boxes	A		
Chilkat River escapement enumeration			A
Goulding Lake stocking	A		
Tahltan Lake	A		
Tuya Lake	A		
Little Tatsamenie Lake	A		
Trapper Lake	A		

Table 50. Pink Salmon Projects and Priorities, 1994-1998.

Pink Salmon	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Cat Creek Fish Passage	B		
Kwatahein Creek fish pass	A		
Fishery Creek fish pass	B		
Improved in-season management (a) stock separation			B
(b) in-season assessment			
Whiterock Creek fish pass	B		

Table 51. Chum Salmon Projects and Priorities, 1994-1998.

Chum Salmon Mngt.	<u>Project Type</u>	
	Enhancement	Habitat Protection
Summer chum investigations		
Creation/improvement of spawning habitat, Chilkat River		A
Boat Harbor chum salmon releases	A	
Limestone Inlet releases	A	

Table 52. All Salmon Species Projects and Priorities, 1994-1998.

All Species	<u>Project Type</u>		
	Enhancement	Habitat Protection	Mngt.
Reestablish Title 16 authority on federal lands/provide funding			A
Nearshore marine conditions optimal release timing studies	A		
Watershed Restoration	A		



## **Narrative Descriptions of Projects**

### **Chinook Salmon:**

**Habitat restoration of Boulder Creek** - Boulder Creek, which has been impacted by highway construction, has been studied by ADF&G to determine chinook salmon habitat and needed restoration activities. A project was designed, and a new bridge has been constructed. The escapements have been substantially below desired levels for a number of years. An incubation box has been placed alongside the creek and seeded with eggs from 10 to 16 females. Several methods have been used to enhance spawning habitat, including placing boulder clusters, cabling large woody debris to stream bed, and creating a boulder step-dam to hold spawning gravel in place. Continued monitoring and executing of additional habitat activities are planned. Source: ADF&G.

**Fishery Creek fish pass/stocking** - Fishery Creek (112-17-30) is a major stream system on the west side of Admiralty Island that flows directly into Chatham Strait. A large vertical waterfall barrier occurs on this system about 1.5 miles above salt water. The barrier prevents access by all anadromous fish to an additional 17 miles of spawning and rearing habitat. This stream has been analyzed for biological feasibility and the barrier surveyed for engineering feasibility; however, because this project falls within designated monument/wilderness jurisdiction, no further action can occur until a thorough analysis of its effects on wilderness have been determined through the NEPA process. The Forest Service has requested that this barrier be analyzed as a potential chinook salmon stocking opportunity to create a self-perpetuating run. This would require further analysis to determine the impacts of chinook introduction on wilderness values. Project scoping and a feasibility study was initiated in 1994. The fish pass will be installed, if feasible, by 1998. Source: USFS.

**Ward Creek fish pass/stocking** - Ward Creek (112-17-16) is another large west Admiralty Island stream system with a partial barrier about one mile above salt water. Although coho salmon have been documented above the barrier, passage is impeded during low- or high-flow periods. This project also falls within the jurisdiction of designated monument/wilderness; therefore a thorough analysis through the NEPA process will be necessary. This system has also been suggested as a potential chinook salmon stocking opportunity to begin a self-perpetuating population. The upper watershed of this system is within lands selected by the Shee Atika Corporation. Source: USFS.

**Wheeler Creek fish pass/stocking** - Wheeler Creek (112-16-30) is another west Admiralty Island system. Unlike Fishery and Ward Creeks the barrier on this system is about five miles from salt water. The 15-meter vertical falls blocks all anadromous fish access to the systems upper reaches. As with the other west

Admiralty Island opportunities, this stream may be analyzed for reintroduction of chinook salmon. A habitat and juvenile population inventory of the watershed was completed in 1992 to determine the number of chinook salmon in the system. Because of the height of the barrier falls and the limited spawning and rearing habitat available above it, it's not likely that a fish pass would be practical for that location. Source: USFS.

**Port Armstrong Hatchery Expansion** - A proposal was received by the Southeast Chinook Technical Planning Team in 1985 for an expansion of southeast Baranof chinook production at the Port Armstrong Hatchery to produce an annual return of 30,000 harvestable adults. Questions concerning costs and water rights caused the team to score this funding request at a lower ranking than several other competing proposals.

In the spring of 1992 a reevaluation of the project goals and the performance of the Deep Cove chinook project prompted ADF&G to seek transfer of chinook production to another site. Several factors influenced this decision: (1) program change at the Snettisham Hatchery to sockeye salmon culture, (2) recognition that Snettisham was not ideally suited for production of chinook salmon smolts, and (3) distance of Snettisham Hatchery from the Deep Cove release site. After a period of complex negotiations and planning, ADF&G allocated \$1,177,870 of federal funding to Armstrong-Keta to conduct the Southeast Baranof Chinook Project at the Port Armstrong Hatchery. These monies have been used to cover operational costs at the hatchery for four years. This project is expected to produce 60,000 harvestable chinooks annually.

In the fall of 1992, AKI began construction operations, with the work continuing through 1994. Major tasks continued in 1994 were as follows: (1) installation of waterlines, (2) construction and installation of new raceways, (3) raceway support structures, and (4) expansion of hydroelectric facilities. By 1995 the capital improvements to the Port Armstrong Hatchery should be completed.

In 1992 and 1993 a combined total of 1.6 million chinook smolts were transferred from Snettisham hatchery to Port Armstrong for imprinting, short-term rearing, and release. As planned in 1994, no chinook eggs were taken or incubated at the hatchery. This production break allows for AKI to commence the change of brood stock to the King Salmon River stock, phasing out Andrew Creek stock (Crystal Lake Hatchery) that had been previously used. In 1995 AKI is scheduled to receive a small number of King Salmon River chinook eggs from NMFS hatchery at Little Port Walter (LPW). Egg numbers will increase annually as the brood stock develops at LPW. In the interim, AKI may fill its unused incubation and rearing facilities with coho salmon. Source: ADF&G/Armstrong/Keta

**Indian River (Tenakee) cooperative fish pass/stocking** - This barriered system has been stocked three times with chinook salmon

fry. The first two stockings occurred in 1986 and 1988; the estimated smolt to adult survival for those projects were about 0.5%. In 1993 it was stocked with 120,000 fry (i.e., 40,000 with coded wire tags); half of the fry were planted into beaver ponds and tributary channels. The purpose of this most recent bioenhancement effort was to develop a chinook brood stock to utilize a proposed fish pass at the barrier falls about 1.5 miles from tidewater in the Indian River. These falls limit access to extensive spawning and rearing habitat adjacent to the 10 miles of low gradient, main channel upstream of the falls.

The USFS plans to construct the fish pass over the barrier falls as early as 1997. Over time, USFS biologists expect rearing coho to outcompete rearing chinook salmon in this system; however, it will take many years for the planted chinook and the native coho stocks to fully utilize the upstream habitat. USFS staff propose shifting enhancement emphasis to the native coho salmon at Indian River, and plan to complete coho salmon egg takes and instream or hatchery incubation of those eggs in 1996 and 1997. The resulting fry would be planted into the upstream habitat the following springs. Based on a smolt-to-adult survival of 10%, up to 3,000 adult cohos could be produced in that system annually. The proposed coho salmon enhancement project would allow USFS to fully stock the upstream habitat and provide substantial adult coho returns to the Tenakee Inlet area many years earlier, than if cohos were left to naturally rebuild its population in the habitat upstream of the falls. Source: USFS

**Farragut Lake Stocking** - ADF&G has been conducting chinook salmon egg takes on the Farragut River to enhance the native runs by stocking fry in Farragut Lake, which is located at the headwaters of the Farragut River about three miles above a barrier. The goal is to collect up to 250,000 eggs from 40 females, incubate and short-term rear fry at Crystal Lake Hatchery, and release them into the lake. Based on preliminary studies conducted from 1983 to 1985, 2,000 to 4,000 adults could be generated. ADF&G personnel collected eggs in 1991-1993, and released the fry in Farragut Lake from 1992-1994. Funding for this project was dropped after the 1994 releases, but CWT recoveries are expected to occur through the year 2000. Source: ADF&G

**Crystal Lake Hatchery Ozonation** - To control the incidence of bacterial kidney disease (BKD) at the Crystal Lake Hatchery, \$200,000 of federal monies was appropriated to installing water depuration equipment at this facility, which has had a long history of fish health problems attributable to BKD. The source was traced to the resident fish in the lake that supplies water to the hatchery. In 1993 a contractor completed the installation of an ozone contact system capable of treating 500 gallons per minute of water. This system was used to treat the water used for egg incubation in 1994. A malfunction of the ozone monitoring system and the ozone destruct system may have caused some mortality in the

BY 94 chinook eggs. The problems have been identified and corrected. The operation of the depuration system will help to maintain the production potential of adult salmon at the facility.

#### **Coho Salmon:**

**Creation of rearing habitat - Taku River** - Creation of access to slough and pond areas on the lower Taku River could expand natural coho production. The Forest Service and ADF&G have identified several sites in recent years. Source: USFS & ADF&G.

**Slippery Creek fish pass** - Slippery Creek (109-43-03) is located on northeast Kuiu Island; it drains into Port Camden. Built in 1988 the fish pass was originally designed for coho, and the upper watershed was stocked with coho fry from Crystal Lake Hatchery. In 1992, tagged coho salmon caught in the commercial fishery demonstrated that the Slippery Creek watershed had contributed about 3,300 coho salmon to the common property fisheries. In addition to coho, pink, chum salmon, steelhead have been observed above the fish pass. Source: USFS

**Portage Creek fish passes** - Portage Creek (110-16-02) is located on north Kupreanof Island. Two fish passes, located 1.5 and 2.0 miles above tidewater, have been constructed over barriers to provide access to approximately 40 acres of spawning and rearing habitat. Coho salmon bioenhancement activities began in 1992; the eggs are incubated at Gunnuk Creek Hatchery. The final egg take from lower Portage Creek stock will be conducted in 1995, and the project will end with fry plants into the system in 1996. The project has the potential of producing from 1,200 to 6,850 adult coho annually; the first marked fish to enter the fishery will be in 1995. Steelhead and chum salmon are expected to utilize these fish passes. Pink salmon are also expected to use them, and if all spawning habitat is accessed by them, up to 95,000 pink salmon could be available to the fishery. Two Forest Service cabins in Portage Bay may serve as a base for sport anglers to target mainly coho and steelhead. Source: USFS

**Dean Creek fish pass** - In 1983, a fish pass installed in Dean Creek (109-50-07) one-quarter of a mile upstream from salt water. Approximately three miles of good coho habitat was made accessible; however, because of a deficiency in a downstream coho population and limited fry transplants from adjacent system, colonization by coho salmon has been slow. A modification in the fish pass in 1994 has allowed pink salmon to access the available spawning and rearing habitat as well. Some coho salmon spawning is occurring; and juvenile coho salmon have been observed above the fish pass. Source: USFS

**Hasselborg/Salt Lake smolt evaluation** - These Admiralty Island systems have the potential to produce significant numbers of coho salmon; however, this potential has not been quantified. ADF&G Sport

Fish Division has proposed a project to capture, enumerate and tag out-migrant coho smolts from this system to learn more about their distribution and contributions to the fisheries and possible reasons for low run strength. In 1994 Sport Fish Division determined it could not initiate this project because of lack of funding. Source: ADF&G.

Greens Creek fish pass evaluation - The environmental impact statement (EIS) for the Greens Creek Mine specified that fish passage would be provided past a barrier in the system to mitigate impacts to fish habitat. That barrier was modified in 1989 through blasting to provide steps for fish passage. Use of the fish pass by pink, chum, and coho salmon has been documented in significant numbers of cohos and chums. There are still questions about the actual rearing potential and net production of coho salmon. The Forest Service is continuing to evaluate this aspect. Source: ADF&G.

Fishery Creek fish pass - This project outlined under the chinook salmon section has the potential for native coho and pink salmon enhancement as well. Source: USFS.

Protection of rearing habitat, Chilkat and Chilkoot Rivers - Timber harvest is expected to occur on major portions of the Chilkat and Chilkoot Rivers and their tributaries. Mining and road construction could also have major impacts on this area. Protection of rearing habitat is vital to maintaining these valuable coho stocks. Source: ADF&G.

Rearing habitat improvement, Chilkat River - From 1980 to 1982, ADF&G, in cooperation with Haines residents, connected nine landlocked ponds to the Chilkat River to create new coho rearing areas. Evaluation of this work will be needed to determine whether additional ponds should be connected to the main river. An additional 21 ponds have been located, so the potential exists to significantly increase coho production on the Chilkat River; however, the project has been inactive for the last 10 years. Source: ADF&G.

Herbert/Eagle River rearing habitat - The Eagle and Herbert Rivers are glacially turbid systems sharing a common drainage and are located about 35 kilometers north of the city of Juneau. The USFS has determined that these systems are limited in their potential to produce coho salmon. The river valley has an abundance of suitable spawning habitat but limited rearing habitat along downstream reaches necessary for support of juvenile fish. The USFS constructed rearing ponds (i.e., interconnected access channels and ponds) in 1988 and 1989, and since that time have been monitoring the site annually. The project, which was completed in 1991, is intended to provide rearing habitat for juvenile fish, particularly coho salmon during the summer and refuge habitat during the winter. Source: USFS.

**Deer Lake bioenhancement** - Deer Lake is a 977-acre lake located on southeast Baranof Island, at the entrance to Patterson Bay. Deer Lake was stocked with approximately 850,000 coho salmon in 1985 and 1987 as part of NSRAA's barren lakes stocking program. In 1988, NSRAA had 700,000 coho salmon in excess of lake rearing capacity. Rather than destroy the fish or stock the lakes too densely, Deer Lake was stocked with the 470,000 coho and a fertilization program was started to increase primary and secondary productivity. In addition, fertilization allowed annual stockings due to the elevated zooplankton biomass. Commercial fertilizers have been applied annually from July through mid-September to (1) sustain zooplankton levels adequate for fish to grow to smolt stage in one year and (2) maintain nutrient levels to ensure good recruitment for next summers zooplankton crop. From 1989 to 1994, 1,440,000, 1,740,000, 1,875,000, 2,056,000, 2,330,000, and 2,076,000 fry were planted into Deer Lake, respectively. Adult coho returns and percent marine survival were as follows: 1990, 53,600 (17%); 1991, 166,100 (24%); 1992, 123,000 (18%); 1993, 76,000 (13%); and 1994, 238,000 (24%). Source: NSRAA/USFS.

**Baranof Lake stocking, Cliff and Lord's Pocket Lakes** - An environmental assessment for the south Baranof lake stocking program was completed in the spring of 1988, and NSRAA (with ADF&G approval) has included these lakes as stocking candidates. NSRAA staff would incubate coho eggs at Medvejie Hatchery and plant the resulting coho fry into lakes that have impassable waterfalls to upstream migrants. During odd and even years, respectively, 1.1 and 1.9 million coho fry would be stocked into approximately 2,400 acres of barren lakes. Smolt migrations and adult contributions would thereafter be monitored. As of 1994 these lakes are not being actively pursued for stocking, although detailed lake survey work has been conducted on Cliff and Lord's Pocket Lakes. Source: NSRAA.

**Deep Inlet coho smolt release** - Coho smolts have been released from Deep Inlet every year since 1990, and the number released has ranged from 49,970 (16.7 g) in 1994 to 136,000 (20.5 g) in 1993. This project has expanded commercial and sport fishing opportunities for cohos in the Sitka area, and the total harvest rates have been high (97.2% of the 19,059 cohos returning in 1994). The original donor stock of coho eggs came from Sheldon Jackson Hatchery (Indian River stock); however, current brood stock is from returns to the Medvejie Hatchery in Silver Bay. Source: NSRAA.

**Shamrock Bay coho smolt release** - Shamrock Bay was added as a release site in 1993 to provide trollers further opportunities to fish on hatchery returns in the Sitka area. Smolts are transported from Medvejie Hatchery to Shamrock Bay by boat, held in net pens for three weeks, and released. Some 279,900 (24.3 g) and 156,442 cohos (21.6 g) were released at the site in 1993 and 1994, respectively. In 1994, 41,145 adult coho salmon returned to Shamrock Bay, for a marine survival of 14.7%. Source: NSRAA.

**Medvejie coho smolt releases** - Coho releases from Medvejie Hatchery are minimized to avoid wild stock interactions. Ideally, just enough fish are released to provide adequate adult returns to meet egg take goals. In 1992 and 1993, just under 3,000 smolts were released from the hatchery; however, in 1994 about 5,000 smolts (18.2 g) were released to better insure adequate broodstock in 1995. In 1993, inadequate hatchery returns forced utilization of fish returning to Deep Inlet and Sheldon Jackson to meet the egg take goals. In 1994, 427 adult cohos returned to the hatchery, for a marine survival of 14.4%. Source: NSRAA.

**Suntaheen Creek fish pass** - The Forest Service has modified a rock barrier, installed two fish passes at a waterfall, coded-wire-tagged native coho salmon stock, and released them upstream of the barriers where good spawning and rearing habitat exists. From 1990 to 1992 coho salmon eggs were also collected at Game Creek and incubated at Medvejie Hatchery; the resulting fry were coded-wire-tagged and planted above the barriers. Significant numbers of adults from these releases have returned, and portions of that return have been harvested in the commercial and sport fisheries; however, assent of the fish passes has not been documented. Continued evaluation of the fish passes and their possible modification is being pursued by the U.S. Forest Service. Smolt trapping below the falls indicated good survival to smolt. Some coho adults have returned to spawn above the falls. Monitoring activities conducted during 1993 indicated the rock barrier modification to be successful for passing pinks and chums. Source: ADF&G and USFS.

**Brown's Creek fish pass** - Brown's Creek (109-52-08) is located at the head of Rowan Bay on Kuiu Island. Located 2.6 miles from salt water, a 28-foot falls blocks access to approximately 17 acres of spawning/rearing habitat. A conceptual design has been developed for a fish pass. Substantial populations of pink and coho salmon and steelhead are present in the lower creek. Coho from the lower portion of the creek could be used to stock the upper watershed. Average peak escapement of pink salmon is 6,500. Some pink salmon may use the ladder, although there is little pink salmon spawning habitat above the falls. A preliminary estimate of construction cost is \$200,000. Logging road access is available within 1 mile. Emphasis on this project has been reduced because of a low benefit:cost ratio; NEPA documentation and a final design would have to be developed. Source: USFS.

**Large woody debris replacement in Kadake and Saginaw watersheds**

The watersheds of Kadake and Saginaw Creeks on Kuiu Island (ADF&G 109-42-30 and 109-44-39, respectively) provide approximately two acres of stream habitat in need of rehabilitation. Logging has impacted both banks along sections of some small- to medium-sized coho rearing streams. The amount of pool-forming, large, woody debris (logs) has been reduced, compared with unlogged streams. Emphasis on placement of large woody debris in clearcut streams has

been replaced with a broader watershed restoration strategy. The Petersburg Ranger District is proposing to rehabilitate timber harvested riparian zones by accelerating the return of riparian vegetation to preharvest conditions. Silvicultural treatments will be used to promote establishment and growth of conifers for the benefit of fish and wildlife. The treatments will include releasing and thinning conifers; releasing involves girdling (killing) red alders that are in direct competition with conifers. Where conifer densities are great, thinning will be conducted to expedite growth of the remaining trees. The goal of the project is to promote uneven-aged stands of conifers that will provide for future recruitment of large woody debris and optimize riparian habitat for fish and wildlife use. A harvested riparian zone within Rowan Creek (109-44-39) will be treated in 1995. This pilot project will guide additional riparian rehabilitation efforts, and sections of Saginaw and Brown Creeks have been proposed for treatment in 1996. Source: USFS

**Lava Falls Creek** - Lava Falls Creek flows into the southwest corner of Port Krestof. A waterfall at tidewater blocks passage of all anadromous fish species. Approximately four acres of spawning and rearing habitat could be made available to coho salmon by construction of two fish passes. Preliminary plans call for coho salmon to be stocked for three years prior to construction of the fish passes. Coho salmon fry from nearby Eagle River (Kruzof Island) have been planted into Lava Falls Creek for the last two years; i.e., about 6,000 fry in 1993 and 1994. Twenty-four thousand fry will be planted there in 1995; about 5,000 of these juvenile fish were coded wire tagged each year.

All permits have been obtained for the Lava Falls fish pass; it is scheduled for construction in 1996; however, because of limited funding construction may be postponed. If fish passage cannot be provided in 1996, the Forest Service will propose seining returning adult coho congregating below the tidal falls and releasing them upstream of the barrier. This activity should keep the system seeded and productive; thereby maintaining a successful coho stock adapted to Lava Falls Creek until the fish pass can be built. Source: USFS.

**Whiterock Creek fish pass** - Cascading waterfalls form a partial barrier to coho salmon and a complete barrier to pink and chum salmon. Step pools were blasted into a rock plateau adjacent to the barrier falls, and large woody debris structures were placed in the main channel in 1992. Annual monitoring indicates upstream habitat has been fully utilized by juvenile coho since completion of the project. All large wood debris structures are still in place, providing additional instream rearing habitat. Between 1993 and 1994, the sill walls on two blasted pools of the fish pass failed because of poor rock quality. In 1995 two concrete walls will be constructed to replace the failed sills and improve passage particularly for pink and chum salmon. Source: USFS.



**Game Creek** - Game Creek (ADF&G 113-31-13) is a major watershed on Chichagof Island that drains into Port Frederick near the City of Hoonah. A cascade falls occurs on one of its main tributaries, blocking access to about two miles of excellent rearing habitat. A baseline buffer monitoring program that began on the watershed in 1992 to determine the effectiveness of jump pools and large woody debris installation has been completed, and no further work is planned. Preliminary analysis of ADF&G escapement data indicated declining chum stocks there, and an analysis of the limiting factors involved is currently underway. Source: USFS.

**Kennel Creek** - Large woody debris was installed in Kennel Creek (ADF&G 112-50-20) in 1992 to create spawning and rearing habitat for anadromous and resident fish. An evaluation by the Forestry Sciences Lab to determine the effectiveness of the habitat restoration work is now overdue. Source: USFS.

**Neka River** - The following projects are proposed for the Neka River (ADF&G 114-33-23): (1) The proposed installation of two incubation boxes will increase anadromous fish production from underutilized habitat and (2) development of a rock pit/rearing pond will create additional habitat for anadromous and resident fish. Necessary monitoring and feasibility investigations will be initiated following the NEPA process implementation. Preliminary analysis of ADF&G escapement data indicated declining chum stocks there, and an analysis of the limiting factors involved is currently underway. Source: USFS.

**Davidson Creek fish passage** - Davidson Creek (ADF&G 111-32-10780) drains into the east side of the Taku Inlet just north of Turner Lake. A reconnaissance survey was conducted in 1963 to assess the suitability for modifying a bedrock falls and planting salmon. Coho were planted in the stream in 1964 and 1965. The stream was again surveyed in 1988, and a detailed fish passage feasibility assessment was recommended. The extent and quality of upstream habitat makes Davidson Creek an excellent enhancement opportunity. Project scoping/feasibility studies and an environmental analysis were conducted in 1990. The fish passage was completed in 1991, and bioenhancement has continued through 1993. Source: USFS.

#### **Sockeye Salmon:**

**Sockeye Central Incubation Facility (Snettisham)** - In 1993 Snettisham Hatchery was retrofitted to function as a central incubation facility for sockeye salmon. The new facility has 10 separate incubation modules designed to service a diverse program of sockeye lake enhancement in northern Southeast Alaska. The new program expands the sockeye smolt project, which is intended to provide for cost recovery potential--a prerequisite for transfer of the facility to the private sector.

The new facility incorporates new systems that provide better water quality and more efficient operation. ADF&G staff believe that Snettisham has the best potential of any Southeast Alaska hatchery to produce sockeye salmon and further advance this technology. In response to legislative direction, the department intends to transfer the operation of Snettisham to the private sector in the near future. In 1994 2,341,579 (BY 1992) and 13,589,305 (BY 1993) sockeye smolts and fry, respectively, were released. Egg receipts to the facility totaled 14,878,000. The Snettisham program melds several important projects at one facility:

**(1) U.S./Canada Transboundary River Enhancement**- When the United States and Canada entered into a treaty governing harvest of salmon stocks of joint concern, they also committed to jointly undertake enhancement efforts designed to benefit both countries. In Alaska the major joint enhancement projects are for sockeye salmon lake stocking on the transboundary rivers (i.e., Taku and Stikine). Snettisham has dedicated four modules for this program.

**(2) Upper Lynn Canal Sockeye Enhancement** - In its second year, this is a cooperative project with NSRAA. Eggs are collected from adult sockeyes in Chilkat Lake and transported to Snettisham, where they are incubated; as the fry emerge they are transported back to Chilkat Lake and released. The project was initiated in 1993 with an egg take of 5.7 million, and 4.4 million fry were planted into the lake in June 1994. To the benefit of commercial, subsistence, and personal-use fishermen in Upper Lynn Canal, about 130,000 adult sockeyes per year will return. There is no cost recovery associated with this project.

**(3) Port Snettisham Sockeye Enhancement** - This program includes both lake stocking and smolt production. Two natural sockeye systems and two barriered lakes exist in Port Snettisham. Speel and Crescent Lakes are an integral part of Snettisham Hatchery's operations, providing the brood source for this portion of the program. These lakes are stocked in some years to maintain and enhance production. In 1994, 1,133,937 and 581,446 eggs were collected at Speel and Crescent Lakes, respectively. Speel Lake is scheduled to receive 100,000 presmolts to enhance production there; the additional production will contribute 1.2 million smolts for release in 1995. Crescent Lake escapements were excellent, and egg takes from that brood stock will be used for stocking Sweetheart Lake as well as for releasing 250,000 smolts in Gilbert Bay in 1995.

Snettisham produces smolts for release at two saltwater sites: (1) the hatchery itself and (2) Gilbert Bay (i.e., in June 1994, 334,000 smolts were released there). This program will generate between 300,000 and 450,000 adult sockeyes per year, beginning in 1997; at that time cost recovery potential should be adequate to cover project costs.

Sockeye fry will also be stocked in Sweetheart Lake, which is a barriered system in Port Snettisham. The outlet creek cascades down a 500-foot fall before entering salt water. Investigations completed in 1993 indicated that 60% of sockeye smolts leaving the lake survived this drop, which is an acceptable mortality in terms of the applicable enhancement technique (i.e., fry planting). In 1994, 1,739,605 fry of Crescent Lake origin were planted in the lake. Analysis of the survival and growth of fry in the lake confirmed the productive value of the lake. The first adults returned in 1993: 12,600 fish. In 1994, the estimated return was 21,800 fish. Further sockeye fry plants are scheduled to continue at Sweetheart lake. This project will produce an additional return to Gilbert Bay of between 20,000 and 60,000 adult sockeyes per year. As the 5,000,000 smolt level is reached, adult production should double. Source: ADF&G

**Surveillance of unmonitored and small sockeye systems** - Very little information exists on small-scale, naturally producing sockeye systems in northern southeast Alaska. Monitoring surveys need to be introduced to identify enhancement potentials and optimal harvest strategies at Crab Bay Lake, Neka Lake, Pavlof Lake, Lisianski Lake, Game Creek Estuary, Hoktaheen Lake, Surge Lake, and Takanis Lake. Source: USFS.

**Redoubt Lake Enrichment and sockeye salmon stocking** - Redoubt Lake encompasses 3,200 acres and is located about 12 air miles south of Sitka. The lake and inlet stream have spawning runs of sockeye, pink, chum, and coho salmon. The lake supports an important local subsistence and sport fishery; it also once sustained commercial harvests of 50,000 to 60,000 sockeye salmon per year and escapements of over 100,000. Escapements are currently at relatively low levels, recently averaging less than 5% of historical levels; in 1994 the escapement at Redoubt Lake was 39,449 fish.

Redoubt Lake was fertilized from 1984 through 1987 by ADF&G and the Forest Service, resulting in significant increases in both age-1 and age-2 smolt production over that of preenrichment years. In addition, the results of subsequent water-quality testing confirmed that both phytoplankton and zooplankton had been boosted by fertilization; however, the sockeye fry population was too low to take full advantage of the available forage and return of the sockeye population to former historical levels of abundance would require several life cycles if solely dependent on natural spawners. Thus, in 1988 the fertilization was terminated until a sockeye fry delivery system could be developed. Fertilization resumed in 1989 and will continue through 1995.

The first group of fish to benefit from enrichment returned to spawn in 1989. Escapement totalled approximately 30,000 fish in 1989, 72,000 fish in 1990, and 45,000 in 1991 : a 3-year average of 49,000 fish. The 2-year period between 1992 and 1993 produced a

lower average escapement of 17,450 fish--a result of the two nonfertilization years (i.e., 1988 & 1989); however the escapement was indeed higher than the preenrichment 1980-1987 average escapement of 8,000 fish. Source: USFS, ADF&G, and NSRAA.

**Chilkat Lake sockeye salmon instream incubation boxes** - Streamside incubation boxes have been operational on a tributary (spring pond) of Chilkat Lake since 1989. Sockeye salmon indigenous to the stream are gathered for brood each fall to seed the incubators with a total of 600,000 eggs. Fry volitionally emigrate the following spring. Fry releases and survivals for brood years 1992 through 1994 were as follows: 396,800 (99.%); 588,000 (98%); and 550,700 (91%), respectively. Source: ADF&G and NSRAA.

**Chilkat River escapement enumeration** - This system is glacial, making escapement enumeration difficult. Sonar counters, fish wheels, and carcass tagging enumeration studies on the spawning grounds lead to more accurate counts and thus better management of the fishery. Two fish wheels were operated on the lower Chilkat River in 1994; sockeye were tagged and released at both fish wheels. Marked fish were recovered on the Chilkat River and Chilkat Lake spawning grounds to assess escapement. Source: ADF&G and NSRAA

**Goulding Lakes sockeye fry stocking** - Goulding Lakes have been identified as having exceptional potential as a nursery lake for sockeye fry stocking. The scope of the project would be to establish a baseline of information for lake limnology and cutthroat populations during the first two years. Stocking of fry would begin in year three; limnology and fisheries investigations would continue through one sockeye life cycle (6 years). Potential adult production would be 200,000 to 300,000 adult sockeyes, based on the ADF&G euphotic volume model. Preliminary limnology and fishery work was conducted in 1994. The status of this project is in the rudimentary stage of planning and if conducted would not likely go forward until late in the decade. NSRAA.

#### **Transboundary River Sockeye Projects:**

**Tahltan Lake** - Tahltan Lake, which has an indigenous run of sockeye salmon, drains into the Stikine River. Limnological studies indicate greater sockeye production is possible. As part of a joint agreement between Canada and the U.S., eggs are collected at the lake and transported to isolation modules that had been constructed at Snettisham. In the summer of 1994, 903,308 fry (i.e., from eggs taken in 1993) were planted back into Tahltan Lake; in fall 1994, 4.2 million eggs were taken there. A majority of the resulting fry will be planted into Tuya Lake in 1995. This enhancement effort is aimed at increasing the catch of the gillnet fleets of both countries. The project is also identified in the Pacific Salmon Treaty. Source: ADF&G

**Tuya Lake** - Tuya Lake is a barriered lake that also drains into the Stikine River. There are no anadromous species inhabiting the lake. In 1994, nearly 4.7 million sockeye fry (i.e., from eggs taken at Tahltan Lake in 1993 and incubated at Snettisham) were planted in the lake. Limnological studies indicate the lake is capable of supporting more than 10 million juvenile sockeye salmon. In 1994, 2.8 million eggs were taken at Tahltan Lake; these eggs will be incubated at the Snettisham facility and the resulting fry released into the lake in 1995. Now that modifications to Snettisham Hatchery have been completed, production goals can increase beyond the previous routine releases of two to three million fish. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G

**Little Tatsamenie Lake** - The lake drains into the Taku River system just south of Juneau. Limnological studies indicate that greater sockeye salmon production is possible for this system. In 1994, 520,947 fry (i.e., from eggs taken in 1992 and incubated at the Snettisham CIF) were planted back into the lake. In the fall of 1994, 1.2 million eggs were taken from this stock. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G

**Trapper Lake** - The partially barriered lake drains into Little Trapper Lake, which supports a sockeye salmon population. The rearing potential of Trapper Lake is underutilized, which makes it an ideal candidate for enhancement efforts. In 1994, 916,000 fry (i.e., from eggs taken at Trapper Lake in 1993 and incubated at Snettisham CIF) were planted back into the lake. In the fall of 1994, 1.1 million eggs were taken from this stock. This enhancement project is identified in the Pacific Salmon Treaty. Source: ADF&G.

#### **Pink Salmon:**

**Cat Creek fish pass** - Cat Creek (ADF&G 110-15-03) in the Frederick Sound unit has been identified as an opportunity to benefit pink salmon by modification of three small bedrock falls. Explosives could be used to shape the barriers. Coho are presently passing the obstructions. The USFS conducted a feasibility analysis in 1991 for this project and determined pink salmon could benefit from the project. The USFS conducted a feasibility analysis in 1991 and determined pink salmon could benefit. The project is not being emphasized because of the present abundance and low value of pink salmon. NEPA documentation, engineering analysis, and a final design will need to be completed before this project could move forward. Source: USFS.

**Kwatahein Creek fish pass** - Kwatahein Creek (109-52-55) is in the Bay of Pillars on west Kuiu Island; the fish pass there was built in 1989. The 60-foot fish pass allows pink and chum salmon to negotiate a 13-foot partial barrier to access 5.2 acres of prime

spawning habitat. Kwatahein Creek is the main pink salmon producer in the Bay of Pillars.

**Fishery Creek fish pass** - This enhancement opportunity was discussed under the chinook salmon section of this plan. The habitat above the barrier has been identified as suitable for several species of salmon, including pinks. Source: USFS.

**Improved in-season management techniques** - Two projects offer improved management precision: (1) Stock separation - Tag/recovery work can provide better migration and timing information for stock specific management prior to terminal harvest areas - (2) In-season assessment of run size. For optimal harvest of good-quality fish, better knowledge of run size is needed prior to the time fish enter the streams. Test fishing and/or limited seine openings might be utilized. Troll catch of pinks also offers an index to abundance that is not currently utilized. Source: ADF&G.

**Whiterock Creek fish pass** - Whiterock Creek (ADF&G 112-12-50) is a small system on southeastern Chichagof Island just north of Sitkoh Bay. A waterfall barrier is located in this system about 1.5 miles above salt water. A pool and weir fish pass was constructed in 1992 to allow access to about five acres of new habitat. Evaluation of the project is continuing. Between 1993 and 1994, the sill walls on two blasted pools of the fish pass failed because of poor rock quality. In 1995 two concrete walls will be constructed to replace the failed sills and improve passage particularly for pink and chum salmon. Source: USFS.

#### **Chum Salmon:**

**Summer chum investigations** - Data from these investigations would assist knowledge of the potential for regulating harvests on the basis of spatial or temporal species separation, improve escapement enumeration on major systems, and determine optimal escapement goals. Emphasis of the project would be in areas that could be managed for chum salmon; e.g., Port Frederick and Tannic Inlet. Additional summer chum salmon stocks for which escapement goals need to be determined include the following: Pybus Bay\*, Peril Strait, Dry Bay, Gedney Harbor, Hood/Chaik Bays\*, Murder Cove, Kelp Bay, Tebenkof Bay\*, Hobart Bay, Limestone Inlet, and Pt. Malmesbury. An additional benefit of this project would be a better knowledge of potential brood stock sources in the following systems: Excursion Inlet, Little Pybus Bay\*, Port Camden, Chaik Bay\*, Security Bay, Lynn Canal, and Taku/Snettisham. (please note: asterisk (\*) signifies system is within wilderness areas) Source: ADF&G

**Creation/improvement of spawning habitat, Chilkat River** - Several sites on the Chilkat River show potential for creating additional spawning habitat for chum salmon. Rehabilitation needs along the Haines Highway should be evaluated where road construction may have

impacted chum habitat. In some areas, debris may be simply removed with heavy equipment to uncover upwelling water for chum salmon spawning. Additional spawning channel locations have been identified and are being studied for their construction potential. Source: NSRAA.

**Boat Harbor chum salmon releases** - In 1988, a cooperative project (DIPAC, NSRAA, and ADF&G) for the rearing and release of chum salmon at Boat Harbor was initiated using Kadashan stock. Approximately 6 million chum salmon fry were released. DIPAC and NSRAA have conducted this program since 1989: 7.5, 8.3, 9.3, 6.7, 9.6, and 6.5 million fry were released in 1989, 1990, 1991, 1992, 1993, and 1994, respectively. Source: NSRAA.

**Limestone Inlet** - The Snettisham Hatchery has been releasing chum salmon fry at Limestone Inlet since 1988; however, chum salmon production at that facility has been discontinued. To enable continued chum salmon production from Limestone Inlet in 1992, the site will be operated by DIPAC and NSRAA. In 1991 fry from both Gastineau (9 million) and Snettisham (2.5 million) facilities were released at Limestone. In 1992 8.5 million 1.2-gram fry were released and 10,880 four- and five-year-old adult chums returned. In 1993, 10 million 1-gram fry were released there, and approximately 57,000 adult chums were harvested in District 111 from the Limestone remote release program. In 1994, 5.8 million chum fry were released there. Source: NSRAA.

#### **All Species:**

**Reestablish Title 16 permitting authority on federal lands and provide enforcement funding** - Current legal interpretations suggest that ADF&G permitting authority may not extend to uncatalogued tributaries of anadromous streams, although many are important to coho production. Title 16 permitting authority must be reestablished for all portions of anadromous fish streams. Legislation and operational plans for habitat protection are pointless, if they are not enforced and proven effective. The effectiveness of current habitat protection standards should be monitored and evaluated.

The crucial need is for funding to allow expansion of surveillance during land-use activities (e.g., timber harvest) and subsequent evaluations. Surveillance is presently inadequate to oversee expansion in private timber harvests. Additional seasonal field support is needed within the Habitat Division of ADF&G. A 6-month position for each area office would allow field participation in timber-sale layouts and increase enforcement during the months when harvests occur. Further increases in the activities of the habitat Division will no doubt be needed over the long term to keep pace with logging, mineral, and municipal development. Regulations should be stringently enforced, and parties responsible for habitat

loss should be required to pay for mitigative projects. Source: Phase II Plan.

**Study of nearshore marine conditions and optimal release timing** - Study of nearshore marine conditions should become a part of the feasibility study of all enhancement projects releasing juvenile salmonids to an "ocean ranching" situation. Timing of release can be crucial to the success of hatchery projects, and water temperature and zooplankton studies should involve all facilities releasing salmonids in Southeast Alaska. Source: Phase II Plan.

**Watershed restoration, Sitka Ranger District** - This effort will encompass a variety of rehabilitation and enhancement strategies for the following watersheds: Shelikof Creek, St. John the Baptist Creek, Iris Creek, Nakwasina River, Appleton Creek, Nakwasina Passage Creek, Rodman Bay, Katlian Creek, Range Creek, Starrigavin Creek, Duffield Creek, Corner Creek, Adams Creek, Sitkoh Creek, Fish Creek, and Whiterock Creek. Restoration plans for Shelikof and Iris Creeks were completed in December 1993. Project work will be monitored annually by site visits to record disposition of structures and determine if habitat objectives were realized.

Interdisciplinary skills will be utilized to develop restoration plans for soils, watershed, silvacultural, and fisheries resources. Treatments include (1) connecting isolated gravel borrow pits to main channels to create new rearing area, (2) inserting large woody debris into streams, (3) removing and/or replacing culverts and/or bridges that impede fish passage, (4) stabilizing slopes or channels, (5) installing drop structures, deflectors, etc., (6) stabilizing banks, and (7) seeding or planting shrubs on mass wasting sites.

After completing watershed inventories, including in-depth riparian evaluations and basin-wide stream surveys, the Sitka District (USFS) developed watershed rehabilitation plans for Shelikof Creek watershed on Kruzof Island and Starrigavan Creek watershed on Baranof Island. Work was completed on Shelikof Creek in 1994, including placing 30 instream large woody debris (LWD) structures, thinning 30 acres of riparian second-growth to promote faster growth of future LWD sources, revegetating 40 acres of landslides and road cut banks, and placing road cross drainage structures. The work on Starrigavan Creek will be completed in 1995; i.e., placing 34 instream LWD structures, thinning 20 acres of riparian second-growth, and repairing or replacing road drainage structures to eliminate sediment sources to streams. Several old gravel borrow ponds will be connected to Starrigavan Creek in 1996 or 1997 to provide additional coho salmon rearing habitat. Source: USFS.

**Watershed restoration, Hoonah Ranger District** - This district will be initiating a variety of rehabilitation and enhancement strategies aimed at watersheds receiving lower impacts from more recent timber activities. Source: USFS



**SECTION 6.**

**NORTHERN SOUTHEAST ALASKA COMPREHENSIVE SALMON PLAN  
20-YEAR PLAN PROJECTS**

**ALL SPECIES**

**1994**



TABLE 53. 20-Year Plan Projects and Target Species.

Project	Project Type and Target Species		Habitat Protection
	Enhancement	Management	
Documentation feeding/nursery areas		Chinook	
Thomas Bay Hatchery feasibility study	Chinook		
Increased enumeration of Chilkat River stocks		Chinook	
Investigate other rehabilitation strategies			Chinook
Thomas Bay Hatchery feasibility	Coho		
Lake rearing/Thomas Bay	Coho		
Escapement enumeration		Coho	
Run timing and magnitude indexing		Sockeye	
Benzeman Lake investigations	Sockeye		
Admiralty Island barriered lakes	Sockeye		
North Arm Port Houghton Lake	Sockeye		
Smolt index/forecasting, Chilkat River	Sockeye		
Re-evaluation of escapement goals		Pink	
Stock separation		Chum	
Lake Ekaterina hatchery siting	Chum		
Thomas Bay area hatchery investigations	Chum		
Haines area logging guidelines	Chum		
Fall chum run forecasting		Chum	
Summer chum release site investigations	Chum		
Water flow control structures	All species		
Swan Lake cooperative fish stocking	Species undetermined		
Goon Dip River fish pass/stocking	Chinook		
Appleton Creek cooperative fish stocking	Chinook		
Flat Cove cooperative fish stocking	Chinook		
Walter Island Creek habitat improvement	Coho		
Roberts Island Creek fish pass	Species undetermined		
114-80-40 fish barrier removal	Species undetermined		
Port Howard fish pass	Species undetermined		

## **Narrative of Projects in the 1994 20-year Action Plan**

**Documentation feeding/nursery areas** - Information on feeding and nursery areas for immature chinook salmon could be gathered by means of an in-season high seas tag and recovery program. Limited troll observer programs and analyses of fish tickets and logbooks could be used to document times and areas with a high incidence of undersized chinook. Legalized retention of sublegal tagged fish could also aid this effort. The National Marine Fisheries Service (NMFS) Auke Bay Lab has conducted studies targeting on immature chinook and coho salmon. Source: Phase II Plan.

**Thomas Bay hatchery feasibility study** - There are two possible water sources for a hatchery in Thomas Bay: Scenery or Swan Lakes. Both lakes have large drainages; however, they are too distant for cost-effective pipeline installations that would directly tap the lake. This project would depend on feasibility of obtaining reliable water closer to the hatchery site. Swan Lake's outlet stream has a falls near salt water; gravity-flow water would therefore be available. It also has a long-range potential for hydroelectric development that would also favor hatchery development. Thomas Bay is an excellent terminal harvest area for any species; however, if a major hatchery is determined to be technically feasible, chinook/ coho salmon production to benefit trollers would be preferable. Source: Phase II Plan.

**Increased enumeration Chilkat River stocks** - There are no directed fisheries on chinook salmon in Lynn Canal during the spring spawning run, except for the sport fishery. Better means of assessing run strength is needed before commercial effort is again allowed to target on the spawning run. Source: Phase II Plan.

**Investigate other rehabilitation strategies** - Improved harvest management and habitat restoration are the preferred methods for rehabilitation of wild chinook salmon stocks. The success of these strategies should be evaluated and the potential for fry stocking and/or on-site incubation of the Chilkat and Taku Rivers chinook stocks investigated. Source: Phase II Plan.

**Coho lake rearing, Thomas Bay** - In conjunction with a hatchery development in Thomas Bay, lakes in the area may offer opportunities for coho lake rearing. Source: Phase II Plan.

**Improved escapement enumeration/goals** - Better enumeration of Chilkat and Chilkoot stocks can be achieved by continuation of weir operations through the coho season. For other Lynn Canal stocks, an escapement index system employing helicopter surveys, possibly coordinated with weir counts for up to one cycle, would greatly benefit management potentials. By improving escapement information, harvest data could be correlated to escapements and eventually used more effectively to achieve desired escapements. Improved escapement data will also allow the relationship between

escapements and subsequent returns to be determined so that escapement goals can be set. Source: Phase II Plan.

**Run timing and magnitude indexing** - The relative abundance of sockeye salmon stocks from the Chilkat and Taku Rivers could be determined by test fishing. Separate stocks could also be identified by scale pattern analysis to determine contribution to the fisheries by time and area. This information would greatly aid in efficient management of these stocks. Source: Phase II Plan.

**Benzeman Lake investigation of potentials** - Benzeman Lake has a unique run of small fish (2.5-3.5 lbs), which is probably the result of a natural selection process to allow adult passage through the lake's underground outflow and across the top of the barrier during overflows. No studies are planned at this time because of logistical problems with enumerating fish entering and exiting the lake through this outflow. Furthermore, the desirability of enhancing a run of such small fish is questionable, because fertilization is expected to increase the numbers of fish, not their size. However, the lake's large size (1,600 acres) and the scarcity of opportunities for significant increases in sockeye salmon production make its potentials well worth investigating. Source: Phase II Plan.

**Admiralty Island barriered lakes** - Major opportunities may exist in three barriered lake system on Admiralty Island where potentials are unknown. Because of high wilderness and recreational values, decisions on whether enhancement activities will be allowed in Admiralty Island National Monument Wilderness awaits the completion of a wilderness-aquaculture environmental impact study as set out in ANILCA Section 1315(b).

**Lake Florence** - This lake has 840 surface acres, is located outside of the wilderness, and could make a contribution to the area sockeye salmon fisheries. The lake's moderate size makes it a good potential study site to determine the effects of sockeye introductions on resident cutthroat trout. Shee Atika Incorporated owns the land and has expressed an interest in participating in an enhancement project. Source: Phase II Plan.

**Hasselborg and Thayer Lakes** - These lakes encompass approximately 3,500 and 3,000 surface acres, respectively. These lakes may have the potential to produce significant numbers of sockeye (or coho) salmon; however, their potential productivity level has not been quantified. Hasselborg Lake is highly productive for sport fishing opportunities, and effects of sockeye enhancement activities upon the lake's sport fisheries is not known at this time. Source: Phase II Plan.

**North Arm, Port Houghton** - Little is known about this lake. While it is documented that coho and steelhead enter the lake, reports of a run of anadromous sockeye salmon have not been confirmed. This

1,200-acre lake system should be investigated for opportunities to increase sockeye production. Fish pass improvement, fertilization, fry stocking, or streamside incubation projects may be appropriate. Source: Phase II Plan.

Smolt index/forecasting - Chilkat and Chilkoot Rivers - During early stages of the sockeye salmon gillnet fishery these systems support and prior to escapement monitoring, management decisions have been based on harvest data. A reliable, preseason forecast of these sockeye salmon stocks would allow more effective management of early portions of this Lynn Canal fishery. Source: Phase II Plan.

Reevaluation of escapement goals -ADF&G biologists consider current index escapement goals too low for some districts. Studies of natural production capacity are needed to determine whether optimum escapements are actually being sought. Such a project would be a major undertaking. In the meantime, where there is evidence to show that specific goals are too low, an increase in those goals might yield greater production and result in increased future harvests. Source: Phase II Plan.

Stock separation - Chum salmon are often harvested when they are intermingled with sockeye or pink salmon. Research should be initiated for regulating chum salmon harvests on the basis of spatial or temporal separation. Tagging experiments, test fishing, and/or biometric support to analyze current catch records are needed to detect any differences in migration routes, milling areas, and variations in timing. Source: Phase II Plan.

Lake Ekaterina, West Crawfish - Shamrock Bay in West Crawfish Inlet is one of the more outstanding hatchery and/or release sites. A nearby stream (ADF&G 113-032-05) offers native brood stocks, but because it is a significant stock, enhancement strategies would have to be designed to allow management for adequate escapement to the stream. There is a hatchery water supply at Lake Ekaterina; however, the greatest drawback there appears to be the lack of flat ground for construction. There has been considerable talk of floating hatcheries, and this site may be the place to try it. The NSRAA is evaluating Shamrock Bay as a release site for coho salmon incubated at the Medvejie Central Incubation Facility. Smolts would be reared for 30 days in saltwater netpens prior to release for imprinting. In addition, NSRAA has proposed studying Lake Ekaterina for stocking coho fry. US/Canada funding is pending. Source: Phase II Plan.

Thomas Bay area hatchery investigations - Investigation of hatchery opportunities in the Thomas Bay area is recommended. Besides the Thomas Bay site, several opportunities for small PNP pink and chum facilities may exist. The following sites offer good terminal harvest areas and may have small to moderate incubation capacity:

(1) Port Malmesbury (ADF&G 109-63-17) and (2) North Arm, Farragut Bay (ADF&G 110-14-15) Source: Phase II Plan.

**Development of guidelines for Haines area logging** - The effects of logging on Klehini chum and chinook salmon should be studied in order to minimize impacts to spawning and rearing habitat and to develop guidelines to reduce impacts on other drainages scheduled for logging. Source: Phase II Plan.

**Fall chum salmon forecast** - The development of a fall chum salmon forecast that is based on overwinter survivals is needed. Selected side sloughs would be monitored as an index of overall survival. The forecast would aid management during early portions of the chum run. The data could also be used to better define escapement goals. Source: Phase II Plan.

**Hatchery/release sites** - Summer chum salmon are desirable species for enhancement. The sites below have favorable harvest areas for remote release of hatchery-raised fry, but their development may be limited by technical and/or economic feasibility: (1) Taiya Inlet, (2) Sawmill Creek/Echo Cove, (3) Sullivan Island, (4) William Henry Bay, and (5) St James Bay. Source: Phase II Plan and DIPAC staff.

**Fish pass study** - Evaluations of all fish passes are badly needed. Past fish pass construction has occurred without an adequate understanding of biological and physical limitations of salmon passage as well as adequate evaluations afterwards. In particular, biological aspects, such as the effects of improving access versus creating new access, new species interactions, and the rate of colonization of newly accessible areas, need to be studied if a fish pass program is to be a success. Experimentation on concepts such as methods for increasing the rate of colonization is needed. Source: Phase II Plan.

**Water flow control structures** - Stream flow control is a technique that has not been utilized in Southeast Alaska but offers potential for improving egg-to-fry survivals for all species as well as juvenile survivals for freshwater rearing species. It can also aid adult spawning success. The Canadians have successfully utilized a number of simple control structures. Although it is usually not economically attractive to develop reservoir capacities adequate for flood protection, a relatively small amount of storage capacity could augment extreme low flows. A habitat survey program will no doubt show many systems in northern Southeast Alaska where low flows are a limiting factor. Flow control for appropriate systems should be explored. Source: Phase II Plan.

**Swan Lake cooperative fish stocking** - This project would be an extension of the Sulloia Lake project to include some fish for Swan Lake in Sitka so that it could be restocked for the annual children's fishing derby. Although Swan Lake is not on National Forest land, all work connected with this project would occur on

National Forest land, and Swan Lake could be stocked when aircraft and personnel return from Sitka for almost no extra cost. This project would serve the public interest well. Source: USFS.

**Goon Dip River fish pass/stocking (W. Chichagof Wilderness Area)**

Goon Dip River has a 25-foot waterfall near tidewater that blocks migration of all anadromous fish species. Lakes of 35 and 160 acres as well as six miles of inlet stream are populated only by sculpin. A vertical-slot fish pass constructed in a tunnel could provide access for introduced chinook or coho salmon. Assuming stocking costs of \$20,000 for three years, and construction costs of \$750,000, the project could have a benefit/cost ratio of 13.5:1, based on habitat potential for chinook salmon. Stream and lake surveys have been completed for this system. NEPA analysis, engineering surveys and design, and a fish stocking program remain to be completed. Source: USFS.

**Appleton Creek cooperative fish stocking** - Appleton Creek has a barrier falls near salt water that blocks anadromous fish access to several miles of stream and pond habitat totalling approximately 15 acres. Correction of the barrier by installation of fish pass may not be cost effective. However, upstream habitat could be utilized for rearing hatchery-incubated chinook salmon. Cooperative fish stocking would be patterned after Indian River, but without the detailed analysis. Following completion of the Indian River study, coded wire tagged chinook salmon would be dispersed throughout Appleton Creek above the barrier falls. The benefit/cost ratio has been calculated at 3.5:1. This project needs further discussion prior to complete endorsement by the NSERPT and prior to project implementation. Source: USFS.

**Flat Cove Creek cooperative fish stocking (W. Chichagof Wilderness Area)** - Flat Cove would be stocked in a manner similar to Indian River. NEPA analysis must be completed to clear this project in a wilderness area. The benefit/cost ratio has been calculated at 3.0:1. This project needs further discussion prior to complete endorsement by the NSERPT and prior to project implementation. Source: USFS.

**Juneau Ranger District**

**Walter Island Creek habitat improvement** - Walter Island Creek (ADF&G 110-34-010) is located on the south side of Port Houghton, 80 air miles southeast of Juneau. It has 3,640 acres of drainage, 3.25 miles of mainstream, and 1.2 miles of tributaries. Average pink salmon escapement is 300 fish, but the data is poor. Spawning habitat is poor in the first 1.25 miles and moderate for the next mile. Stream gradient of 3% contributes to poor gravel supplies. Rearing habitat is moderate in the lower section and better upstream. Coho salmon appear to favor this stream. Wire gabions have been recommended to improve enhancement opportunities. A determination of the type of substrate in the pink salmon spawning



grounds is required before the most effective gravel trapping structure can be designed. Project identification, scoping, and feasibility is scheduled for 1993 at a cost of \$4,000. Source: USFS.

**Roberts Island Creek fish pass** - Roberts Island Creek (ADF&G 110-31-004) is located on the south shore of Port Houghton about 80 air miles southeast of Juneau. This creek system drains 7,460 acres and has 5.8 miles of mainstream and 7.5 miles of tributaries. Escapement data is poor, but pinks and chums are the most common resident species. Spawning and rearing habitats are good in the first mile; however, a large log barrier diminishes further spawning and rearing habitat. There is some disagreement as to the enhancement opportunities at this location.

**114-80-40 fish barrier removal** - This nameless anadromous stream (ADF&G 114-80-40) is located in the vicinity of Excursion Inlet at the southeast end of Glacier Bay. There is a fish barrier in the stream. Identification, project scoping, and feasibility studies have not yet been conducted. Source: USFS.

**Port Howard fish pass** - This system (ADF&G 112-61-12) is located 2 miles northwest of Point Howard, which is located 5 miles due west of Juneau. There is a fish barrier near tidewater. Resident fish species include pink and chum salmon. Project scoping and feasibility studies were conducted in 1992, and the project was determined to be nonfeasible. Source: USFS.



**SECTION 7.**

**U.S./CANADA PACIFIC SALMON TREATY ENHANCEMENT PROGRAM  
FOR SOUTHEAST ALASKA**

**1994**



## **Background**

In 1985 several substantive changes to the course of the fisheries development in southeast Alaska were made necessary by the implementation of the U.S./Canada Pacific Salmon Treaty (PST). To mitigate for the harvest restrictions imposed on all gear groups a new enhancement program was developed. Initial goals included the production of 100,000 chinook salmon, 1,000,000 chum salmon, and 20,000-40,000 sockeye salmon. The federal government appropriated \$20.0 million for this enhancement program, defining the grant funding structure so as to provide for annual payments over a five-year period, beginning in 1986.

In the late spring of 1985, the State of Alaska began to explore various options for chinook salmon mitigation through investment in new hatchery production. A multi-disciplinary mitigation team composed of representatives of the Alaska Department of Fish and Game, National Marine Fisheries Service, commercial fishing organizations, and private sector aquaculture associations, was formed to deliberate on all aspects of chinook salmon production including various enhancement technologies, fisheries management issues, and harvest opportunities.

Although primary emphasis had been placed on implementing projects to produce chinook salmon for common property harvests by the troll fleet, other projects designed to produce chum, coho, and sockeye salmon have also been proposed and endorsed. All of these projects will provide additional benefits for each of the targeted gear groups. Every year, beginning in 1985 and ending in 1991, ADF&G has hosted mitigation group meetings to discuss the status and future direction of the U.S./Canada enhancement program. The final group meeting was held in February of 1992. At that time the mitigation team members made project recommendations for consideration by the Commissioner. The Commissioner acted upon these recommendations and made the final project determinations in April of 1992. These project choices were consolidated into a grant proposal and forwarded to NOAA for review and approval.

On September 30, 1992, ADF&G received permission from NOAA to expend the FFY91 appropriation. The final allocation of \$2.2 million fulfilled the \$20 million dollar commitment by the federal government to the State of Alaska for the Alaska Salmon Enhancement Program.

## **Current Status**

The Alaska Salmon Enhancement Program currently operates under two federal grants. NOAA grant NA17FP0006-04 is funded with federal monies appropriated in federal fiscal years 1989 and 1990. NOAA grant NA17FB0424-03 receives its funding from monies appropriated in federal fiscal year 1991. Combined these grants provide \$9.3 million to implement 36 salmon enhancement projects.

At the beginning of 1994, a total of 22 projects were still active. During the year, four projects progressed to completion, reducing the total number of projects to be conducted in 1995 to 18. Projects completed in 1994 focused for the most part on modifications and upgrades to existing southeast Alaska hatchery facilities. Project highlights for 1994 follow.

**Snettisham CIF.** This construction project was completed and put into operation in 1993. The design capacity of this facility is 30 million sockeye salmon eggs. These eggs are housed in 10 discrete incubation modules. Ponding and start-up of fry can occur in two larger rearing modules. The newly installed mechanical equipment heats, chills, gas stabilizes (using oxygen supplementation) and depurates the water used for incubation and rearing. These new mechanical systems give the hatchery workers unprecedented flexibility in their daily fish cultural procedures.

In 1994 2,341,579 BY 92 sockeye smolt were released as were 13,589,305 BY 93 sockeye fry. Egg receipts to the facility totaled 14,878,000.

**Neets Bay Raceway Project.** This chinook salmon enhancement project was initiated in 1993. The monies allocated to this project totaled \$450,000. Upgrades which are to be made to Neets Bay include the installation of 3 each 100' x 12' aluminum raceways, the construction of an adult holding and spawning complex, modifying the fish pass, and putting into place all the requisite plumbing. Construction, expected to begin in 1994, was delayed one year. However, the design and fabrication of the aluminum raceways was completed and the raceways were barged to Neets Bay for installation in 1995. The construction contract for the installation of the raceways and other structures was awarded to South Coast Construction. Work is expected to be completed by June of 1995.

**Hidden Falls Hatchery Increased Incubation and Rearing.** This chum salmon enhancement project provides additional incubation and rearing capacity for chum salmon at the Hidden Falls Hatchery to increase production to 93 million fry annually. The increase of 31 million fry (from 35 million eggs) over the previous capacity is expected to generate an additional 620,000 adults for harvest. The funding provided to complete this project has purchased incubators, holding ponds, net pens and floats, a feed storage barge, a fish grinder, monitoring equipment for the water supply pipeline, a skiff and motor, a computer, a pallet jack and water supply piping. For the immediate future, the additional production of fry will be released at the hatchery and at a remote site at Takatz Bay. To insure that the local area has the carrying capacity to support the additional chum releases, NSRAA has determined that an incremental approach toward further releases is warranted. The first increment of 10 million eggs was taken in 1993. NSRAA will continue to slowly increase production towards the ultimate project goal of 35

million eggs, evaluating returns to gain further information about marine survival.

**Crystal Lake Hatchery Ozonation.** This project provided funding to install water depuration equipment (ozonation) to control the incidence of bacterial kidney disease (BKD). This facility has a long history of fish health problems attributable to this disease. The source of this pathogen has been traced to fish residing in the lake supplying the water to the hatchery. The ozone system is expected to reduce, if not completely eliminate, the incidence of this disease. Installation of the ozonation system was completed in 1993 at a cost of \$175,206. This system is capable of treating 500 g.p.m. of water which is used for incubation purposes. This system was used to treat the water used for egg incubation in 1994. A malfunction of the ozone monitoring system and the ozone destruct system may have caused some mortality in the BY 94 chinook eggs. The problems have since been identified and corrected. The operation of the depuration system will help to maintain the production potential of adult salmon at the Crystal Lake Hatchery.

The Alaska Salmon Enhancement Program continues to run smoothly and will have enhancement projects continuing on until November 30, 1996. At that time all funds will be exhausted.

Tables 35-38 identify each enhancement project which have been funded through the U.S./Canada process as of December 1994. The first four tables are presented by species and include information by agency, project, adult production goal, status, and cost by federal fiscal year. The total allocation to date for the enhancement program has been \$19,865,280. This includes federal fiscal years 1986 through 1991. Of this total \$11,160,349 has been dedicated for chinook salmon production, \$6,201,193 for sockeye production, \$1,613,468 for chum production, and \$314,000 for coho production. Table 39 summarizes this distribution and includes contract administration and technical support expenditures. Completion of these projects, federally funded under the Alaska Salmon Enhancement Program, will directly assist the northern and southern southeast teams in achieving the goals established in the Phase I Regional Comprehensive Salmon Plan.

Table 54. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR CHINOOK SALMON, 1994.

FACILITY OR PROJECT		ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1.	SSRAA - WHITMAN LAKE HATCHERY EXPANSION	33,000	FFY 86 - COMPLETED	1,291.7
2.	NSRAA - MEDVEJIE HATCHERY EXPANSION	17,300	FFY 86/87 - COMPLETED	2,095.1
3.	ADF&G- HIDDEN FALLS HATCHERY EXPANSION	52,000	FFY 87 - ENGINEERING/ DESIGN SITE PREPARATION/CONSTRUCTION FFY 88 - CONSTRUCTION (558.8) PLUS ALLOCATION FROM BARANOF WARM SPRINGS (691.2)	250.0 1,799.0 <u>1,250.0</u>
4.	FRED - CRYSTAL LAKE HATCHERY RENOVATION	10,000	FFY 88- COMPLETED FFY 91	TOTAL 3,299.0 420.0
5.	FRED/COMM. FISH - CARROL INLET PREDATION STUDY	N/A	FFY 86 - COMPLETED	30.2
6.	FRED - BARANOF HATCHERY	N/A	FFY 88 - DISCONTINUED	51.6
7.	FRED - FARRAGUT RIVER FRY PLANTS, 5 YEARS	4,000	FFY 89/90 - PROJECT INITIATED IN 1991	77.0
8.	FRED - HARDING RIVER FRY PLANTS, 5 YEARS	800	FFY 89/90 - PROJECT DISCONTINUED 9/30/95. - BAANCE OF FUNDS TRANSFERRED TO SNETTISHAM AND INDIRECT	113.96
9.	FRED - CRYSTAL LAKE HATCHERY WATER MAIN REPLACEMENT	N/A	FFY 89/90 - WATERLINE WORK COMPLETED RACEWAY WORK CONTINUES	725.0
10.	NSRAA - MEDVEJIE HATCHERY REARING SPACE	N/A	FFY 89/90- COMPLETED 1991	60.0
11.	SSRAA - WHITMAN LAKE HATCHERY MODIFICATIONS	17,500	FFY 89/90 -PROJECT COMPLETED 11/30/94	359.63
12.	FRED - DEEP COVE CHINOOK REMOTE RELEASE. CAPITAL AND OPERATIONAL COSTS, 5 YEARS.	N/A	FFY 89/90 -INITIATED IN 1991 - DISCONTINUED 1993. BALANCE OF FUNDS TRANFERRED TO S.E. BARANOF PROJECT (1,177.8)	137.13
13.	NSRAA - HIDDEN FALLS NET PENS	(Included in #3 above)	FFY 89/90 -COMPLETED IN 1993	70.0
14.	AKI - S.E. BARANOF CHINOOK CAPITAL COSTS	60,000	FFY 89/90 -TRANSITION FROM DEEP COVE PROJECT INITIATED IN 1992	1,177.87
15.	AKI - S.E BARANOF CHINOOK OPERATIONAL COSTS, 3 YEARS	(Included in # 14 above)	FFY 1991 - PROJECT BEGINS JULY 1, 1993	453.15
16.	FRED - CRYSTAL LAKE HATCHERY OZONIZATION	N/A	FFY 1991 - PROJECT COMPLETED IN 1993 - BALANCE TO SNETT.	175.2
17.	NSRAA - MEDVEJIE RACEWAY COVERS	N/A	FFY 1991 - PROJECT BEGINS IN 1993	70.0
18.	SSRAA - NEETS BAY HATCHERY UPGRADE	N/A	FFY 1991 - PROJECT INITIATED IN 1993	450.0
19.	FRED - UPPER LYNN CANAL CHINOOK ENHANCEMENT	3,000	FFY 1991 - PROJECT INITIATED IN 1993	103.8
ADULT PRODUCTION POTENTIAL		197,600	TOTAL EXPENDITURES ALL PROJECTS	\$11,160.35



TABLE 55. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR CHUM SALMON, 1994.

FACILITY OR PROJECT		ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1.	FRED - MARX CREEK SPAWNING CHANNEL	50,000	FFY 87 - BROOD TRANSPORT, FRY SURVIVAL, CODED WIRE TAGGING - COMPLETED FFY 88 - BROOD TRANSPORT, FRY SURVIVAL CODED WIRE TAGGING - COMPLETED	18.1  <u>18.1</u> TOTAL 36.2
2.	NSRAA - TAKATZ BAY PROJECT REMOTE CHUM REARING	600,000	FFY 86 - FRY TRANSPORT, REARING AND RELEASE - COMPLETED	95.0
3.	FRED - TAKATZ PROJECT  FRED - HIDDEN FALLS BARRIER NET	N/A	FFY 86 - CHUM EGG TAKE, INCUBATION AT HIDDEN FALLS - COMPLETED FFY 86 - NET PURCHASE AND INSTALLATION COMPLETED	23.0  <u>95.0</u> TOTAL 118.0
4.	SSRAA - WHITMAN LAKE HATCHERY CHUM INCUBATION	250,000	FFY 86 - CHUM INCUBATORS FOR EXPANDED CAPACITY - COMPLETED	36.9
5.	NSRAA - HIDDEN FALLS INCUBATION AND REARING	540,000	FFY 88/89 - INITIATED IN 1990, 35 MILLION ADDED EGG CAPACITY	385.0
6.	SSRAA - KENDRICK BAY FLOAT CAMP	200,000	FFY 88/89 - INITIATED 1990, CAMP AND OPERATIONAL EQUIPMENT - COMPLETED	149.39
7.	SSRAA - EARL WEST FLOAT CAMP	N/A	FFY 89/90 - INITIATED 1990, CAMP AND OPERATIONAL EQUIPMENT - COMPLETED	125.0
8.	SSRAA - NEETS BAY HATCHERY INCUBATION AND WATER SAVINGS	400,000	FFY 89/90 - PROJECT COMPLETED 1993	667.97
ADULT PRODUCTION POTENTIAL		2,040,000	TOTAL EXPENDITURES ALL PROJECTS	\$ 1,613.47

TABLE 56. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR SOCKEYE SALMON, 1994.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. FRED - SNETTISHAM CIF	316,800	FFY 86 - TURNER LAKE PATHOLOGY AND LIMNOLOGY INVESTIGATIONS - COMPLETED SPEEL LAKE INCUBATION PROJECT - COMPLETED FFY 87 - ENGINEERING /DESIGN - COMPLETED LIMNO/LAKE OUTLET INVESTIGATIONS - COMPLETED FFY 88 - CRESCENT LAKE LIMNO./EVALUATIONS 18 MILLION EGG FACILITY, CONSTRUCTION - INITIATED 1992	63.2      <u>1,100.0</u>
		TOTAL	1,481.2
2. SSRAA - BEAVER FALLS HEAT EXCHANGER ADULT HOLDING, BROODSTOCK RIPENING	88,000	FFY 87- COMPLETED FFY 88 - COMPLETED	175.4 170.0
3. FRED - BEAVER FALLS	145,200	FFY 86 - STATE FY87 OPERATIONS FFY 87 - STATE FY88 OPERATIONS NAHA/PATCHING/KARTA EGG TAKE, TRANSPORT EVALUATION FFY 88 - STATE FY89 OPERATIONS MCDONALD/HUGH-SMITH EGG TAKE MCDONALD/HUGH SMITH/VIRGINIA LAKE TRANSPORT, EVALUATION PATCHING /HECKMAN LIMNOLOGY	185.0 168.6   153.6 151.5    <u>134.2</u> <u>68.2</u>
		TOTAL	1,206.5
4. FRED - KLAWOCK HATCHERY	29,000	FFY 87 - CONVERSION COMPLETED KLAWOCK/NECK LAKES LIMNOLOGY	110.0 <u>50.0</u>
		TOTAL	160.0
5. FRED - SITUK/MOUNTAIN LAKES	40,000	FFY 87 - LIMNOLOGY COMPLETED	18.3
6. FRED - SNETTISHAM, PHASE II	N/A	FFY 88 - INTERIM FACILITY FOR 1990 TRANSBOUNDARY RIVER COMMITMENTS - COMPLETED 1993 SWEET HEART /SPEEL LIMNOLOGY STUDIES TBR OPERATIONAL COSTS LONG LAKE /CRATER LAKES FISH SAMPLING	90.0  27.8 70.0 4.0
7. FRED- SNETTISHAM CIF		FFY 89/90 - 18 MILLION EGG CAPACITY - COMPLETED 1993	1,350.0
8. FRED - SWEATHEART/SPEEL		FFY 89/90 - 3 YEARS EVALUATION. - COMPLETED 6/30/94	<u>113.4</u>
		TOTAL	1,673.5
9. FRED - HUGH- SMITH, BAKEWELL BADGER LAKES REHABILITATION	UNDETERMINED	FFY 89/90 - STATE FY 91 REHABILITATION	131.6
10. FRED - MCDONALD LAKE	112,000	FFY 89/90 - TWO YEARS OF REHABILITATION, INITIATED 1991	78.2
11. FRED - REDOUBT LAKE	60,000	FFY 89/90 - FIVE YEARS OF REHABILITATION , INITIATED 1991	455.0
12. NSRAA - REDOUBT LAKE CIF	CANCELLED	FFY 89/90- PROJECT MONIES REPROGRAMED INTO THREE NEW SOCKEYE SALMON PROJECTS (\$495,000 TOTAL)	-0-

TABLE 56. (CONTINUED)

FACILITY OR PROJECT		ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
13.	FRED/SSRAA BEAVER FALLS OPERATIONS	N/A	FFY 89/90 - SSRAA OPERATES UNDER CONTRACT WITH ADF&G	110.0
14.	FRED - SNETTISHAM CIF	(INCLUDED IN #15 BELOW)	FFY 89/90 - CHILKAT SOCKEYE MODULES 9 MILLION EGG CAPACITY - COMPLETED 1993	300.0
15.	NSRAA-CHILKAT LAKE SOCKEYE ENHANCEMENT	249,943	FFY 89/90 - CHILKAT SOCKEYE ENHANCEMENT 5 MILLION EGGS , COULD INCREASE TO 10 MILLION BEGINS 1993	178.0
16.	NSRAA - LAKE EKATERINA INVESTIGATIONS	N/A	FFY 89/90 - LAKE INVESTIGATIONS BEGIN 1993	17.0
17.	FRED - SALMON LAKE SOCKEYE REHABILITATION	40,000	FFY 91 - PROJECT BEGINS IN 1993	122.0
18.	FRED - SNETTISHAM OFF-HATCHERY REARING	300,000	FFY 91 - PROJECT COMPLETED- BALANCE TO SNETT. FRY/SMOLT	51.9
19.	FRED - SNETTISHAM CIF	(INCLUDED IN # 1&7 ABOVE)	FFY 1991 - PROJECT REIMBURSES FOR TBR OPERATIONAL COSTS FY 91 - COMPLETED 1993	108.8
20.	CFMD - SNETT. FRY/SMOLT	N/A	INITIATED 7/1/95	17.6
21.	CFMD - SNETT. FRY/SMOLT II	N/A	INITIATED 7/1/95	104.9
ADULT PRODUCTION POTENTIAL		1,380,943	TOTAL EXPENDITURES ALL PROJECTS	\$ 6,201.2

TABLE 57. ALASKA SALMON ENHANCEMENT PROGRAM STATUS REPORT FOR COHO SALMON, 1994.

FACILITY OR PROJECT	ADULT PRODUCTION GOAL	STATUS	COST (In Thousands)
1. NSRAA - DEER LAKE COHO BY-PASS	UNDETERMINED	FFY 91 - PROJECT STARTED 1992 - COMPLETED IN 1993	50.0
2. FRED - KETCHIKAN AREA LAKE STOCKING	25,000	FFY 91 - FRY TRANSPORT BEGINS 1993 AND RELEASE. SOME FUNDS TO SNETT. FRY/SMOLT II	114.0
3. FRED - OLD FRANKS BIOENHANCEMENT	25,000	FFY 91 - FRY TRAPPING AND TRANSPORT BEGINS 1993	150.0
<b>ADULT PRODUCTION POTENTIAL</b>	<b>50,000</b>	<b>TOTAL EXPENDITURES ALL PROJECTS</b>	<b>\$ 314.0</b>

TABLE 58. DISTRIBUTION OF FUNDS BY SPECIES, POTENTIAL ADULT PRODUCTION, AND TOTAL ALLOCATIONS, 1994.

SPECIES	POTENTIAL ADULT PRODUCTION	ALLOCATIONS
CHINOOK SALMON	197,600	\$ 11,160,349
SOCKEYE SALMON	1,380,943	\$ 6,201,193
CHUM SALMON	2,040,000	\$ 1,613,468
COHO SALMON	50,000	\$ 314,000
CONTRACT ADMINISTRATION		\$ 412,100
ADMINISTRATIVE OVERHEAD		\$ 54,170
ADF&G TAG LAB COMPUTER HARDWARE AND SOFTWARE		\$ 110,000
TOTAL FUNDING RECEIVED		\$ 19,865,280*
TOTAL U.S./CANADA FUNDING		\$ 20,000,000

\* DIFFERENCE DUE TO ADMINISTRATIVE COSTS ASSESSED BY NOAA

#### DISTRIBUTION OF FUNDS BY AGENCY

NORTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION	\$ 3,020,100
SOUTHERN SOUTHEAST REGIONAL AQUACULTURE ASSOCIATION	\$ 3,536,000
ARMSTRONG-KETA INC.	\$ 1,631,020
ALASKA DEPARTMENT OF FISH AND GAME	\$ 11,678,160
TOTAL ALLOCATIONS	\$ 19,865,280

## **ACKNOWLEDGEMENTS**

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